PUBLICATIONS OF DEBRECEN HELIOPHYSICAL OBSERVATORY

Heliographic Series No.1

Debrecen Photoheliographic Results 1977

HELIOPHYSICAL OBSERVATORY
of the
HUNGARIAN ACADEMY OF SCIENCES

D E B R E C E N

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L.Dezső, O.Gerlei and Á.Kovács

Debrecen Photoheliographic Results

for the year

1977

on the basis of photographs taken at the observatories of Debrecen(Hungary), Gyula(Hungary), Kislovodsk(U.S.S.R.), Kodaikanal(India) and Ebro(Spain)

Completed with three additional commentaries.

HELIOPHYSICAL OBSERVATORY
of the
HUNGARIAN ACADEMY OF SCIENCES

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Preface to the Series

"The daily photoheliographic programme" of the Royal Greenwich Observatory (RGO) "was terminated at the end of 1976. The programme has been taken over by the Heliophysical Observatory, Debrecen". { F.Graham Smith, *Q.Jl.R.astr.Soc.* (1978), *19*, p.462.}

Beginning from 1st January 1977 the Heliophysical Observatory of the Hungarian Academy of Sciences in Debrecen undertook the responsibility for the continuation of the Greenwich Photoheliographic Programme according to Resolution of Commission 10 (on Solar Activity) of the International Astronomical Union (IAU), approved by the IAU General Assembly in Grenoble on 2nd September 1976.

The wording of the Resolution concerned is as follows:
"Recognizing the need of ensuring the continuation of this long series of homogeneous reports performed during one century" (by RGO) "and noting the capability and interest of the Debrecen Observatory to continue such a program, Commission 10 encourages the Debrecen Observatory to undertake the following responsibilities: to carry out direct photoheliographic observations at Debrecen; to organize cooperation between other observatories willing to contribute to such a project; with the assistance of the Greenwich Observatory to ensure a homogeneous continuity of the gathering, reduction and publication of such data; to ensure the archiving of the original photographs and the access to interested scientists from around the world." { *Transactions of the IAU, Vol. XVI B*, p.107 (Proc. 16th General Assembly, ed. E.A.Müller and A.Jappel) D.Reidel, Holland, 1977; cf. also *Trans.IAU, Vol. XVII A* - Part 2, p.11 (Reports on Astronomy, ed E.A.Müller), D.Reidel, Holland, 1979.}

All of the above has also been approved by the proper authority, the Section of Mathematical and Physical Sciences of the Hungarian Academy of Sciences in its Session on 15th December 1976. { cf. *Magyar Tudomány*, (Review of the Hungarian Academy of Sciences; in Hungarian) New Ser.*Vol.XXII*, p.29, No.1, January 1977. }

Now that the present volume of "Photoheliographic Results" reached completion, the first one (No.1) of our Heliographic Series and at the same time the direct continuation of that of Greenwich's last volume (published in 1980), I wish to mention all who encouraged and helped us in order to be able to properly carry out the undertaking.

Primarily, I owe a debt of gratitude in several respects to Drs. F.Graham Smith, D.Stickland, G.H.Wilkins and B.D.Yallop of RGO, especially as they provided an opportunity for us to maintain continued homogeneity of the continuation of the records. For that purpose during 1980-1981 we were lent a few dozen original Greenwich "white-light" heliograms from RGO, obtained before 1977 on days for which we also have our own observations. Thus, we could remeasure some Greenwich plates with our methods and in this way we got a firm basis for various comparisons (see the papers of Á.Kovács and O.Gerlei on pp. 211 - 230). On the other hand, the work of RGO in question was long well-known to us as we had used Greenwich data for our statistical studies of sunspots { cf. *Publ.Debrecen Obs. Vol.1*, Nos.1-4 (1964); *Debrecen Obs. Repr.Ser.* Nos.1-3 and 5 (1965-1968), i.e. *BAC 16*, p.65, *Publ.Czech.Acad.Astr.Inst.* No. 51, p.41, p.49, and *IAU Symp. No.35*, p.70, respectively }. Moreover I sometimes visited (1966-1977) the Solar Department of RGO and also got acquainted directly with their observations and measurements.

The Debrecen Observatory has a collection from the second half of 1954 of white-light photoheliograms with an image of circ. 10 cm diameter. Before the middle of January 1958 we had taken them at the Konkoly Observatory in Budapest. In May 1972 we set up an observing station in Gyula and since then our two fairly similar heliographs are separated by about 100 km. Several full-disc photoheliograms are obtained both in Debrecen and in Gyula, whenever possible every day.

Hereby the Debrecen Observatory could often send, upon request, some copies of its heliograms to assist other observatories. Occasionally we even loaned the original negatives if this was appropriate. Some of them were used at RGO to fill in the gaps (the first one for 1966, the last two for 1976) in their combined series of heliograms.

However, the original purpose of our white-light observations has been to collect a lot of material for investigations on proper motions of sunspots associated with the developments of sunspot groups. Such studies have formed one of the main programmes of the Debrecen Observatory for many years.

Up to 1977 above all we went into the details of relative spot motions. But now, our extended programme demands even more reliable spot coordinates that should also be good enough to carry out successful solar rotation studies by the tracer method. Therefore, during the last decade we spared no effort to improve our methods of measurements and data processing. (Notwithstanding that the comparisons of random sampling, mentioned above, did not raise any plausible objection to our positions obtained through the procedure adopted and used earlier.)

Concerning the measurements of areas of sunspots we have drawn up the plan for a special television scanner. A team of specialists in electronics at the Institute of Experimental Physics of the Kossuth University of Debrecen took charge of carrying out this plan and the new area measuring instrument came into use in 1979.

When, in 1976 during the IAU General Assembly in Grenoble, after the suggestion of several foreign solar physicists, I assumed responsibility for the continuation of the Greenwich sunspot catalogue (without the photospheric faculae), I was able to do this because, among others, Dr.M.N.Gnevyshev, then Head of Kislovodsk Observatory, previously assured me of the co-operation of his institute in filling gaps in our series of observations. It was also a great satisfaction that the late M.K.Vainu Bappu, Director of Indian Institute of Astrophysics, already during the Grenoble meeting, offered his help, telling me that if necessary we also could receive heliograms from their Kodaikanal Observatory as RGO had for decades.

In order to have a firm guarantee for a long term co-operation (i.e. for lasting solar cycles), our collaborative arrangement on this point with the observatory of Kislovodsk has been incorporated within the frame of the agreements between the USSR Academy of Sciences and the Hungarian Academy of Sciences. In the vicinity of Kislovodsk, the Caucasian branch of Pulkovo Observatory of the USSR Academy of Sciences has excellent possibilities to supply us with heliograms required for measurement in Debrecen. We are very thankful to the leading scientists of Kislovodsk Drs. M.N.Gnevyshev and V.I.Makarov for their efforts in helping us to collect the wanted heliograms and even trying to make others available from various Soviet observatories.

Usually we manage to obtain white-light heliograms often on nearly 300 days per year, however our yearly requirement of original foreign heliograms still amounts to about 150, each one taken on different days. Namely, for the avoidance of systematic errors in spot positions, we need in general

for each heliogram wanted a second one for checking too. Owing to this condition it was especially difficult to gather the material of observations.

Unfortunately, it was 1977 for which we encountered the most difficulties in gathering the heliograms. In the fourth quarter of 1986 we have had still insufficiently covered some days for the year 1977. Finally by courtesy of Dr.J.O.Cardús, formerly director of the Observatorio del Ebro, it was possible to overcome this obstacle.

For the time being, we rely upon the help of the Observatorio del Ebro, arranged by the favour of Dr.Cardús on other occasions too. Of course it may be that occasionally the support from other observatories could also be indispensable. However, for the future there is a hopeful possibility to have more heliograms easily available. Prof. H.Haupt, director of the Astronomical Institute of the University Graz, had long been keenly interested in the continuation of the Greenwich heliographic programme and we discussed a co-operation in this matter between the Kanzelhöhe Solar Observatory of the Graz Institute and the Debrecen Observatory several times. As a result, Dr. T.Pettauer, Head of the Solar Observatory at Kanzelhöhe, has designed the plan for building a photoheliograph analogous to the ones of Debrecen and Gyula. It is ready by now and mounted jointly with their flare-patrol equatorial telescope. Beginning with the year 1988 they intend to make regular photographic observations, taking 10 cm solar pictures on the same photo-emulsion and through the same kind of filter as we do.

In the present and forthcoming catalogues we are publishing almost all data on sunspots that RGO has also given in the fullest detail up to and including the observations of the year 1915. Later on, RGO measured the spots of a group less elaborately and generally, only in the case of larger groups have the chief components been measured individually (see particulars at the end of the volume, p.238). In addition, our catalogue gives various kinds of numerical data and indicates the magnetic spot polarities for each sunspot as well as, wherever reasonable, a special number as a mark of identification.

Concerning the magnetic polarities of sunspots, we rely first of all on the data recorded at the Mt.Wilson and Yunnan observatories. Most of these data, up to date unpublished in detail, are at our disposal by courtesy of Dr. Robert F.Howard and Prof. You-ji Ding, respectively. It is quite convenient to use both data sets since as a rule our observations are intercurrent between that of Mt.Wilson and Yunnan by less than half a day.

Of course, we also take into account the results of all other relevant magnetic observations from the literature or through personal communications if available.

It is clear that the work under discussion demanded a lot of preparations. Nevertheless the long delay of publication resulted in particular from the unexpected circumstances above-mentioned. I hope, the other backlog, i.e. the subsequent volumes, can be worked out in a rather rapid succession given convenient computer facilities for data-processing. When arrears have been overtaken the yearly observations should be measured, reduced and published within the next calendar year.

I would also like to take this opportunity to express here our sincere gratitude to all of our Hungarian colleagues and foreign scientists, especially to M.K.Vainu Bappu (†), J.O.Cardús, You-ji Ding, M.N.Gnevyshev, H.Haupt, R.F.Howard, V.I.Makarov, T.Pettauer, F.Graham Smith, D.Stickland, G.H.Wilkins and B.D.Yallop for their effort of helps. No doubt, their kind assistance has contributed significantly to the successful accomplishment of our task.

Debrecen, 21st August 1987

L. Dezső

PUBLICATIONS OF DEBRECEN HELIOPHYSICAL OBSERVATORY
Heliographic Series No.1

L.Dezső, O.Gerlei and Ágnes Kovács

PHOTOHELIOGRAPHIC RESULTS FOR THE YEAR 1977

I N T R O D U C T I O N

1. GENERAL

The present volume contains the results of measurements of positions and areas of sunspots observed during the year 1977. For long years the Royal Greenwich Observatory has published data of this kind. A detailed informative description of the *Greenwich Photoheliographic Results* for the years 1874 to 1976 inclusive is given at the end of this volume.

2. MATERIAL OF OBSERVATIONS AVAILABLE

2.1. H e l i o g r a m s

All data of our own measurements here published are on the basis of 365 "white-light" photoheliograms of 1977. These heliograms have been taken as follows:

97 in Debrecen,
193 in Gyula, at our photospheric observing station,
68 at the Kislovodsk Observatory (a branch of Pulkovo) of the USSR Academy of Sciences,
5 at the Kodaikanal Observatory of the Indian Institute of Astrophysics,
2 at the Observatorio del Ebro.

In total 365 heliograms; one heliogram for each day of 1977.

To avoid incidental systematic differences in data of measurements between our heliograms and the three sets of 75 foreign heliograms, altogether 63 extra heliograms which were obtained at the three co-operating observatories were used as a control. Namely, for each heliogram missing in our series we generally need two, both taken at the same place on two con-

secutive days and one of these must be taken on the same day when we also have our own observation. By courtesy of the co-operating foreign observatories we were always able to use for measurements in Debrecen their original heliograms (in total 75 + 63).

The 290 Debrecen and Gyula heliograms recorded here were selected from more than 4000 heliograms, using the best one from each day. Moreover for each day (with a single exception) at least two heliograms, taken, as a rule, within less than a 10-minute period, were measured, the second one as a check-test. In 1977 our heliograph observations in Debrecen were ended in the latter part of June, while in Gyula, after some months of interruption, they were restarted at the beginning of May (cf. the end of Section 3.1). Nevertheless, we have our own daily heliograms almost over a half year in 1977 (from April 17 to October 10 inclusive except five days).

We have also had the opportunity to make an important check-test with a few copies of frames from the white-light solar patrol of the Sacramento Peak Observatory taken at the end of October 1977.

2.2. M a g n e t i c p o l a r i t i e s

Principally those data have been used which were determined at the Mount Wilson Observatory of the Hale Observatories (Pasadena, Ca, USA) and at the Yunnan Observatory of Academia Sinica (Kunming, China). In 1977 it was possible to determine sunspot polarities at Mt.Wilson on 273 days and at the Yunnan Observatory on 218 days. (Both of these above figures also include the incomplete daily records.) We used the copies of the original observations, i.e. the sunspot polarity drawings of Mt.Wilson and Yunnan.

In addition, we also took into consideration some published data, especially Rome observations for the second half of 1977 {V.Croce and F.Casamassima, Longitudinal magnetic fields. 1977, *Oss.Astr.Roma, Monthly Bull. Nos.233,* pp.9-13; *234,* pp.8-9; *235,* pp.5-6; *236,* pp.4-5}.

2.3. A c k n o w l e d g e m e n t s are due to all observers for their participartion(listed in order of the frequency of observations).
In Debrecen: Á.Kovács, L.Gesztelyi, A.Ludmány, B.Kálmán, O.Gerlei and G.Gyertyános;
in Gyula: L.Győri, L.Márki-Zay, S.Rostás, Z.Kiss and L.Kondás;
in Kislovodsk: V.V.Makarova and V.P.Mikhailutsa;
at Ebro the observer-in-charge was José Cid;
at Mt.Wilson: T.S.Gregory, T.B.Ake and S.P.Padilla;

in Yunnan: Ding You-ji, Zhang Heng, Zhong Shu-hua, Lung Ti, Ye Hui-lian and Zhong Ling-sheng (here the names written in Chinese fashion).

We owe particular debt of gratitude to Zhong Shu-hua who kindly prepared for us duplicates of the polarity records of Yunnan.

It is clear that first and foremost we are indebted to the leading scientists M.N.Gnevyshev and V.I.Makarov, the late M.K.Vainu Bappu, J.O.Cardús, R.F.Howard and You-ji Ding, who were associated with the observatories of Kislovodsk, Kodaikanal, Ebro, Mt.Wilson and Yunnan, respectively, for arranging for us the possibility to use the material of observations required.

Last but not least we also wish to acknowledge the kind help received from the National Solar Observatory of Sacramento Peak. Namely, in August 1985, when one of us (L.D.) was lucky enough to be there, we still needed material to fill in a gap in the available series of heliograms for 1977. Therefore Deputy Director R.N.Smartt offered their assistance and Mr.L.B. Gilliam prepared and mailed us the desired copies (taken from a long roll film).

3. OBSERVATIONS

3.1. H e l i o g r a p h s

Two fairly similar photoheliographs are used, one of them in Debrecen, the other in Gyula. Their objectives have a diameter of about 14 cm and focal length of nearly 2 m. In both heliographs an orthoscopic-type magnifying lens system (having a focal length of about 6 cm and made by Zeiss more than a half century ago) projects the prime focus image to the secondary focal plane enlarged approximately five times. The full-disc solar photographs are taken through yellow filters on photo-emulsions of 14×14 cm size. The filters lie between the objective and the prime focus, from the latter at a distance of about 9 cm. At the focal plane of the objective a cross-hairs of two spider-wires are fixed. The wires are oriented approximately in N-S and E-W directions, i.e. they intersect perpendicularly, and the point of intersection is exactly in the optical axis of the heliograph. The exposures were carried out with shutters made in our own workshop. The shutter consisted essentially of a spring-driven metal slit of easily variable width (≥ 2 mm) which moved with a constant speed over an area of $\varnothing \approx 20$ mm parallel to the E-W spider-wire and close to it quite as much as the construction permitted.

Both heliographs are located in the open air to minimize optical degra-

dation due to turbulence of rising hot air masses. We try to avoid turbulence inside the heliograph tube, too. Therefore, if reasonable, the daily motion of the Sun is followed with the equatorially mounted heliograph to keep its tube shaded during the whole period of observations each day. Moreover, in front of the dewcap of the objective there is a light-metal plate which is turned aside briefly (< 1 s), in a plane parallel to the objective, only during exposures. On the same equatorial mounting, parallel to the heliograph, there is a refractor with a polarization helioscope of Merz and a high-powered eyepiece. In this way, both in Debrecen and in Gyula, if feasible, before exposures the observers follow a suitable spot-configuration (those which are on the limit of visibility are the best). Thus the seeing is monitored visually and the photographs are taken at the moments of better-than-average seeing. (In order to facilitate the finding of the right exposures, at the bottom of a simple tube mounted also on the heliograph, a selenium cell under a yellow filter always points towards the Sun during observations and a microampere meter continuously shows the photocurrent.) We consider a heliogram well-exposed if sunspots are distinctly visible even when close to the solar limb and the same time the limb darkening also comes strikingly into sight at a glance.

Alternately, Kodalith pan films of estar base (of Kodak) or Gevaert Dia C diapositive glass-plates (of Agfa-Gevaert) were used together with a metal-interference-filter of about 10 nm effective half-width centered at 554 nm or with a Schott GG 11 filter, respectively. In both cases the photographs are taken practically in the same small spectral region.

During 1977: the objective aperture was nearly always stopped down to 13 cm in Debrecen, while in Gyula generally to 7-8 cm (sometimes only to 9 cm); in Debrecen the Gevaert plates, in Gyula the Kodalith films were mainly used and the diameter of solar image was about 11.0 cm and 10.4 cm, respectively.

Before beginning the observations to continue the Greenwich Photoheliographic Programme both the Debrecen and Gyula heliographs were dismounted and thoroughly re-examined, especially the steal tube gratings which assure inflexibility. At the same time in Gyula, at the top of a 40 m high water tower, the heliograph got a new equatorial mounting made by Zeiss (Jena) and a renovated massive platform with a grid floor allowing the free circulation of air. The construction of a new platform of observa-

tion for the Debrecen heliograph started only in the middle of 1977 and from this time onward no white-light heliograms had been obtained in Debrecen for more than a year. {The external appearance of the heliographs are shown in L.Dezsõ, Report from a Solar Observatory, *Solar Physics, 79,* pp.195-199,1982.}

3.2. Instrumental constants

The spider-wires, when a new cross-hairs comes into use, must be checked for perpendicularity, i.e. its error in orthogonality determined, since both wires are regularly measured by us(notwithstanding the fact that for orientation a single wire would be enough). Their point of intersection, at the optical axis, is indispensable to apply the distortion corrections. When one of the wires becomes unusable (which generally one fails to notice before observation) it is still possible to measure the heliograms adequately. Namely by means of the permanent roughnesses along the spider - wire we can also find, in case of need, the position of the optical axis. This is an advantage of using the spider-wire; otherwise we give preference especially to its elastic expansion property which guarantees that it will remain taut and aligned. (The spider-wire should be boiled in water a few minutes before stretching it; then sometimes it is fit for use even for 2-3 years.)

To insure rigidity, both the objective and the photographic emulsion (hereinafter called plate), with its plate holder are at fixed places in our heliographs, and we also used the magnifying lens system in a constant position. In spite of this fact, practically no deteriorative effect to image sharpness has been observed due to slight changes of the effective focal length of the objective (in consequence of temperature variations or of the ever variable atmospheric layers acting as a supplementary lens).

On the inclination of the photographic plate: The optical axis should be perpendicular to the plane of photographic plate in the secondary focus. If in our photoheliographs this perpendicularity is in error by about 0.3° or more ($< 1°$), the image of the whole Sun's disc still remains, in practice, sharp enough. However, we must apply corrections to get spot positions with the required accuracy.

It is a simple and at the same time an exact method to determine the inclination of the photographic plate together with the distortion of the enlarging lens system, i.e. the main instrumental constants.

In order to determine the distortion corrections of the enlarging lens system (E) photographic positive glass copies of the distortion target,

shown in Figure 1, were used where the diameter of the circle no.14 is diminished to 22 mm. In the heliograph, this target replaces the cross-wires and, oriented accordingly, it should be photographed with lamp-light switched on in front of the objective. In this way one can get an enlarged negative picture of the target on a glass photoplate. Here and in the (original) target let r and r_t be the corresponding distance from the optical axis (O). By means of measuring all 13×72 points of intersection (i.e. the crossings of circles and radii) as well as the point O in both the target and its enlargement, it is easy to find from the data set of r/r_t (viz. the scales of enlargement) the desired instrumental constants.

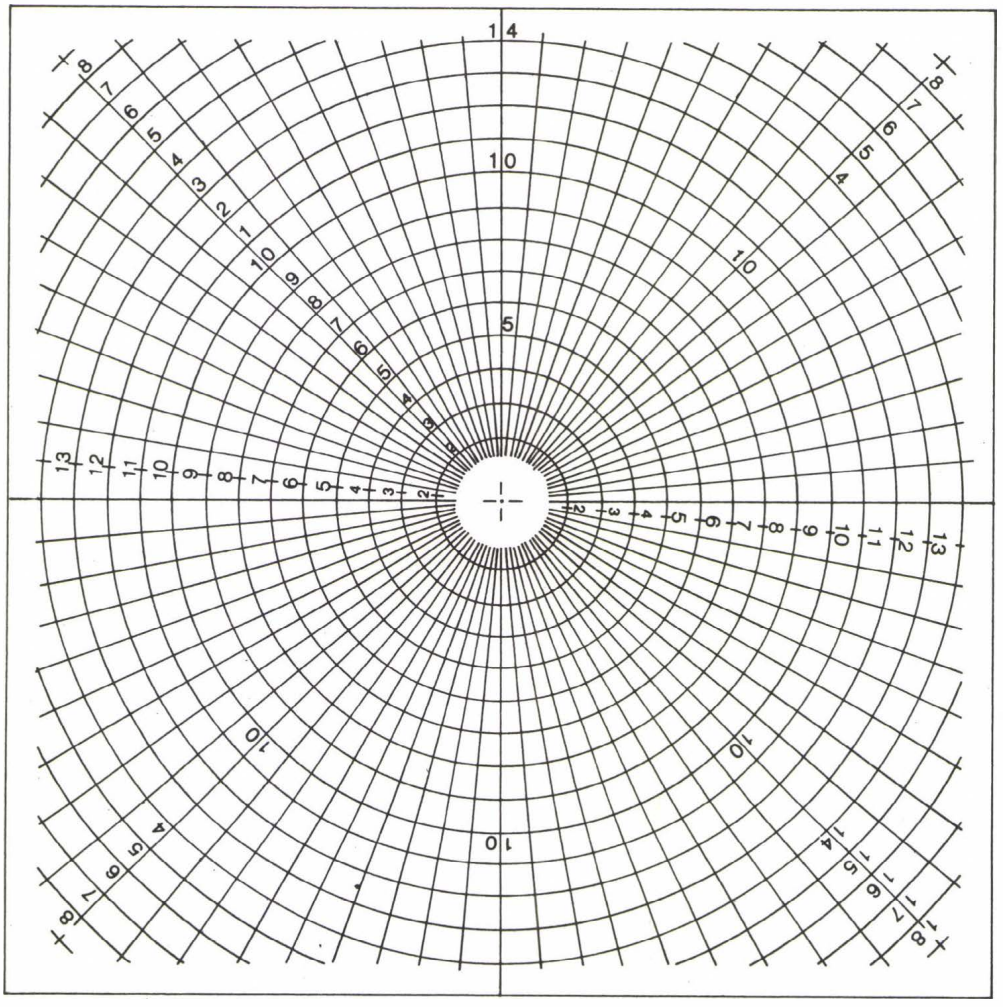


Fig.1 The distortion target

It is quite evident that if the photoplate has an undesirable inclination (ε), then along the outer circles both the r and r/r_t values should conspicuously exhibit a maximum and a minimum. In this respect the r/r_t data are rather more reliable than the r values for reasons easily accounted for (namely, nuances in r_t along each circle already spoil the smooth running of the r-curve). The position angle (P_ε) of the inclination as it points at the maximum enlargement can be found immediately and the angle of inclination (ε) may be calculated from the simple geometrical relation as follows.

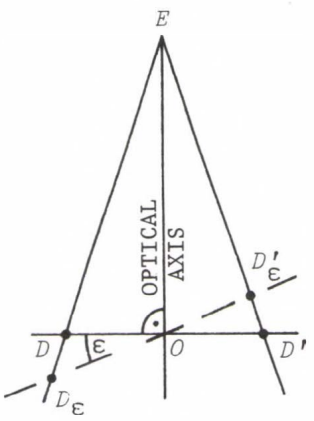


Fig.2

In Figure 2 the plane of drawing, which includes the optical axis, is perpendicular to the plane of the photographic plate. In the image of the distortion target DD' is a diameter of any circle in the untilted case while $D_\varepsilon D'_\varepsilon$ is the same if the plate is tilted by the angle ε (and the position angle of the point D_ε is P_ε).

Let OD_ε and OD'_ε the maximum and minimum values of r be r_a and r_i, respectively. Then, from the triangles ODD_ε and $OD'D'_\varepsilon$ (with $\varepsilon < 1°$) and taking also into account e.g. the triangle ODE, we have

$$\operatorname{tg}\varepsilon = \frac{q}{r}\,\frac{r_a - r_i}{r_a + r_i}$$

Here $OD = OD'$ is the actual value of r at the position angles of $P_\varepsilon \pm 90°$ and $q = OE$ is the distance between the plate (centre) and the (second principal point of the) enlarging lens system. Dividing in the second fraction both the numerator and denominator by r_t, this formula can thus be used to calculate ε (in good approximation) from the maximal and minimal enlargements (r_a/r_t and r_i/r_t respectively) given the above.

It would be a difficult task to make a fine adjustment correcting the inclination of the photographic plate to reach $\varepsilon = 0.0°$. However it is easy to compensate completely by calculation of the unwanted effect of $\varepsilon \neq 0.0°$ if the angle of inclination ($\varepsilon < 1°$) and its position angle (P_ε) are known.

In order to do so let us introduce in the plane of the photoplate a rectangular Cartesian left-handed coordinate system with its origin in the

optical axis where the place of maximal enlargement (in the tilted plane) is on the positive x-axis. If the coordinates in the tilted and untilted plane are referred to as x_1, y_1 and x_2, y_2, respectively, then by means of Figure 3 the formulae of transformation of the coordinates x_1 and y_1 of any S'_ε point of the tilted plane will be as follows:

Let the orthographic projection of any point S'_ε be denoted by S_ε. If the plane of drawing of Figure 3 is

the plane I, which includes also the x-axes,

then $OS_\varepsilon = x_1$, $OS = x_2$ and the angle $SOS_\varepsilon = \varepsilon$

(The plane of the angle ε is by definition always perpendicular to the y-axis.)

Consequently

$$S_0S = x_1 \cos \varepsilon$$

$$S_0O = x_1 \sin \varepsilon$$

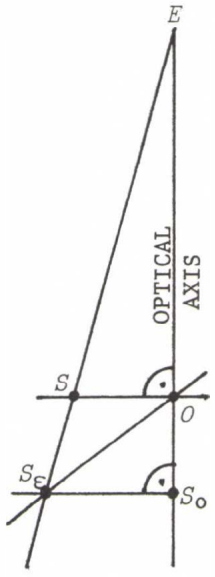


Fig.3

the plane II, which includes also the (common) y-axis,

then $S_0S_\varepsilon = y_1$ and $OS = y_2$, however the angle $SOS_\varepsilon < \varepsilon$, but since the points S_0 , O and E remained exactly the same as in the plane I therefore even now

$$S_0O = x_1 \sin \varepsilon$$

In both planes (I and II) from the similarly lettered triangles EOS and ES_0S_ε , with $EO = q$, we have, respectively,

$$x_2 = \frac{q\, x_1 \cos \varepsilon}{q + x_1 \sin \varepsilon} \qquad y_2 = \frac{q\, y_1}{q + x_1 \sin \varepsilon} \tag{3.2.1}$$

The method outlined above is a very convenient way to determine the $(\varepsilon, P_\varepsilon)$ constants of the inclination of the photographic plate by means of the distortion target, notwithstanding the fact that there is a possibility to find these data from solar observations, too. Namely, it is easy to recognize the deviation from the wanted perpendicularity discussed above by using, as we do, heliographs of German mounting and observing regularly on both the east and west side of the pier, since systematic differences in positions, calculated from the apparent Sun's disc centre, will appear between such east and west observations.

These differences originate in the fact that the true and apparent centres of the Sun's disc do not coincide when the perpendicularity in question is not fulfilled. A clear proof may be seen at a glance from an example shown in Figure 4, where $O = C$ is the true centre of the Sun's disc and VW one diameter of the disc (i.e. $VO = OW$), perpendicular to the optical axis. The VW solar diameter turns into V_eW_e or V_wW_w if the plane of photographic plate deviates from perpendicularity by the angle ε and consequently the apparent disc centres (C_e and C_w) depart from the true centre (C). (C_e and C_w are drawn distorted in Fig.4) The e indices are used to mark such situations in which the heliograph is on the east side of its pier; the w indices show the same on the west side. Thus $P_{\varepsilon e}$ and $P_{\varepsilon w}$ are the position angles of C_e and C_w, respectively, furthermore $P_{\varepsilon w} = 180° + P_{\varepsilon e}$, as the photographic plate rotates through 180° while the heliograph is shifted from the east side to the west side of the pier.

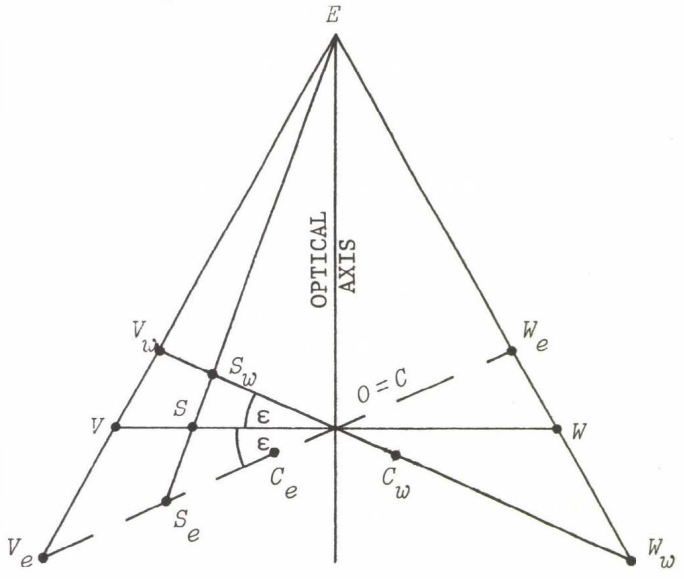


Fig.4 The enlarging lens system (E) and inclinations of the photographic plate

By using the definitions and designations introduced above and considering a spot S in Figure 4, moreover taking $|d| = C_eO = OC_w$ (> 0) and $OS = x_2$, $OS_e = x_{1e}$, $OS_w = x_{1w}$, then

$$x_{1e} = x_e + d \qquad x_{1w} = x_w - d \quad , \text{ where}$$

x_e ($= C_eS_e$) and x_w ($= C_wS_w$) are the actually obtained coordinates measured from the apparent centres of the Sun's disc C_e and C_w, respectively.

Applying the inclination correction to x_{1e} and x_{1w} the corrected x_{2e} and x_{2w} should agree. It is easy to see through Figures 4 and 3 that in the case of x_{2w} , the sign of the second term in the denumerator of the formula for x_2 is reversed. Accordingly

$$\frac{q\ (x_e + d)\ \cos\varepsilon}{q + (x_e + d)\ \sin\varepsilon} = \frac{q\ (x_w - d)\ \cos\varepsilon}{q - (x_w - d)\ \sin\varepsilon}$$

and from here (disregarding $2d^2 \sin\varepsilon \ll 1$) we get

$$x_w - x_e = +2d - \frac{2}{q}\, x_w x_e \sin\varepsilon$$

It should be emphasized that this relation is valid in the case of Figure 4 where the apparent centre of the Sun's disc is shifted to east when the heliograph is on the east side of the pier. Should the sense of the plate inclination be opposite and the heliograph again be on the east side of the pier, then the apparent centre of the Sun's disc will be shifted to the west. In the latter case we should interchange all e and w indices in Figure 4, and now we get

$$x_w - x_e = -2d + \frac{2}{q}\, x_w x_e \sin\varepsilon$$

In both relations of $x_w - x_e$ on the right side the first term is always larger by one order of magnitude than the second, which are negligible in the case of small x-values, especially when the spot is within 2/5 of the solar radius.

Hence it follows that the sign of the $x_w - x_e$ differences roughly also shows the direction of inclination, i.e. its position angle ($P_{\varepsilon e}$).

Accordingly, the values of ε and $P_{\varepsilon e}$ can be determined by means of a great number of differences in spot positions, which are measured on pairs of heliograms taken practically at the same time on the west and east side of the heliograph pier, and are expressed in a rectangular Cartesian left-handed coordinate system with its origin in the apparent Sun's disc centre. Considering these west-east differences as vectors, if there is sufficient data, it is possible to find a most representative "mean" vector. Its magnitude and direction can be regarded as $|2d|$ and $P_{\varepsilon e}$, respectively. Finally the value of ε can be calculated from d:

$$tg\,\varepsilon = \frac{q}{R^2}\, d$$

where R is the radius of the Sun's disc measured. This relation follows from the one used in connection with the distortion target, taking $r_a = R + d$ and $r_i = R - d$, as in Figure 4 $V_e C_e = C_e W_e = R$.

The method outlined above has the advantage that it may also be performed after the observations already done. We believe that if a sufficient number of relevant spot pairs are available, the probable errors will not be greater than in the case of the method previously outlined, at a rough guess 0.1° and 10° for ε and P_ε, respectively. In any case such differences have only inconspicuous effects on the spot positions.

For the year 1977 the observations have been reduced by using the instrumental constants as follows:

Heliograph in	ε	$P_{\varepsilon e}$	Number of the used spot pairs
Debrecen	0.76°	185°	111
Gyula	0.33°	120°	171

(The position angles are measured from astr. N toward E.)

The data given here are on the basis of results from spot positions; the distortion target method, introduced only after 1977, was used only for checking.

We wish to acknowledge the assistance of B.Kálmán in the matter of inclination.

The distortion of the magnifying lens system has been determined for both of our heliographs by means of the distortion target from the measured enlargements (r/r_t) corrected for plate inclination. Both heliographs have pincushion distortion, which is slightly larger in Debrecen than in Gyula. The results can be expressed as

$$\frac{r}{r_t} = a + br + cr^2$$

where, using the relevant q distances (cf. p.17), we have for the heliographs:

	in Debrecen	in Gyula
a =	+5.997774	+5.661418
b =	-0.000073	-0.000121
c =	+0.000015	+0.000013
(q =	38 cm	41 cm)

In consequence, the coordinates x_2 and y_2 corrected for distortion will be

$$x_3 = \frac{x_2}{D} \ , \ y_3 = \frac{y_2}{D} \quad \text{where} \quad D = 1 + \frac{b}{a}(x_2^2 + y_2^2)^{\frac{1}{2}} + \frac{c}{a}(x_2^2 + y_2^2) \tag{3.2.2}$$

3.3. Orientation of the heliograms

Since the position angle (P_0) of the northern extremity of the axis of solar rotation is measured (eastward) from the north point of the Sun's disc, our spider-wire directed roughly north-south can only serve for orientation if its exact deviation angle (ΔP_0) from the north direction is known.

The precise zero of position angles for the Debrecen and Gyula heliographs were determined by the so-called zero heliograms which were exposed twice, with an interval of about 90 seconds between the two exposures, the heliograph being firmly clamped. Two overlapping images of the Sun were thus produced and the exposures were generally so made that the line joining the points of intersections of the two solar limbs (I_n , I_s) passed approximately through the centre of the plate. The angle between this line and the north-south spider-wire ($\Delta P_0'$) is measured. For the sake of higher accuracy several points along the two solar limbs were measured instead of the immediate measurement of the points I_n and I_s and by this means the positions of intersections were calculated.

Corrections should be applied for variation in the Sun's declination (ΔP_δ) , for the slight convergence of the relevant meridians (ΔP_m) and for variation as a consequence of atmospheric refraction (ΔP_A). Accordingly, the error of the northern extremity of the spider-wire (ΔP_0) used is

$$\Delta P_0 = \Delta P_0' + \Delta P_\delta + \Delta P_m + \Delta P_A$$

(Here all position angles are measured in the same sense as P_0.)

To show these corrections explicitly, let us assume, for the sake of simplicity $\Delta P_0 = 0.0°$, i.e. the orientation of the cross-hairs is exactly in north-south and east-west directions.

(ΔP_δ) The variation in the Sun's declination reveals itself by the inclination of the Sun's path to the parallels of declination. It is easy to see that

$$\Delta P_\delta = \frac{\delta_{n+1} - \delta_n}{2\pi}$$

where $\delta_{n+1} - \delta_n$ is the relevant difference in declination from one day (n) to the next (n+1) which never exceeds 0.4°. The maximal value of $|\Delta P_\delta|$ may amount to 0.06°.

(ΔP_m)

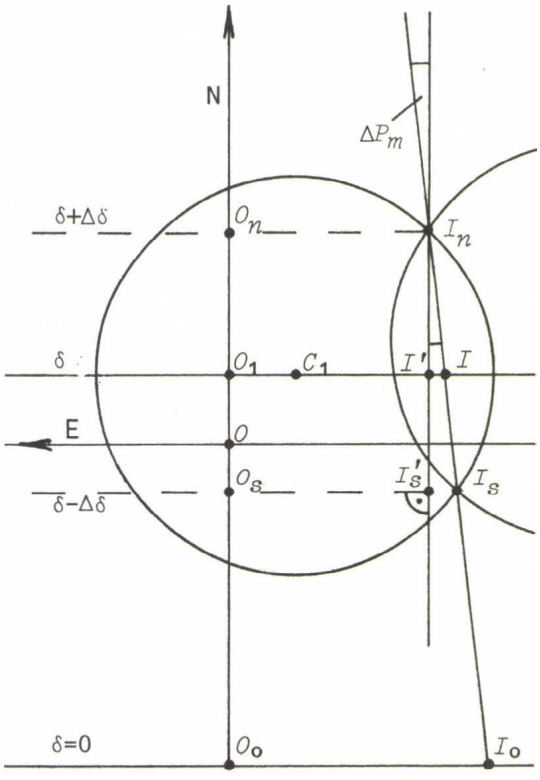


Fig.5

In (the strongly distorted) Figure 5, C_1 is the centre of the solar image at the moment of the first exposure of a zero heliogram, and O is the centre of the cross-wires of the heliograph,while the Sun's declination (δ) is constant between the two exposures. Accordingly the meaning of the other letters of the Figure are self-explanatory (I_nI' is parallel to O_nO). On the solar disc the meridian passing through the points I_n and I_s is not parallel with the meridian through the point O, as ($O_1I = O_oI_o \cos\delta$)

$$O_nI_n = O_oI_o \cos(\delta+\Delta\delta) \quad \text{and}$$
$$O_sI_s = O_oI_o \cos(\delta-\Delta\delta).$$

Thus from the triangle $I_sI_n I_s'$ (where the angle $I_sI_n I_s'$ is ΔP_m) we have

$$\Delta P_m = IO_1 \operatorname{tg}\delta$$

where IO_1 is an angular distance.

The maximal value of $|\Delta P_m|$ may amount to approx. 0.1°.

(As ΔP_m is in direct proportion to the distance IO_1, measured always from the north-south wire, in 1977 at our zero heliograms ΔP_m was nearly negligible in most of the cases since this distance was then generally small.)

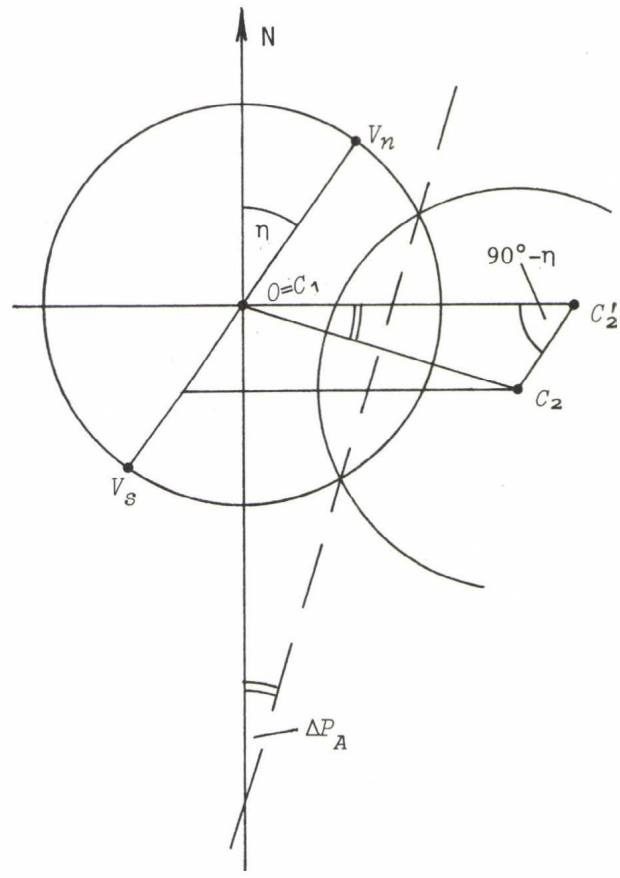


Fig.6

In Figure 6 for the sake of simplicity let the centre of the solar image (C_1) coincide with the centre of the cross-wires of the heliograph (O) in a zero heliogram at the first exposure. At the second exposure, let C_2' be the centre of the solar image if the altitude of the Sun (h) is high enough ($h > 30°$), and C_2 if the altitude is low, while during the two exposures the change in declination was assumed to be negligible. The apparent shift of the solar centre $C_2'C_2$ is a consequence of the change in atmospheric refraction (ΔA) that takes place parallel with the vertical diameter (V_nV_S) of the solar disc; η is the position angle of V_n. (Fig.6 shows the situation in the early morning.) The interval between the two exposures (Δt) expressed in angular measure is ($\Delta t=$) $C_1C_2 \approx C_1C_2'$ and the angle $C_2C_1C_2'$ is equal to the wanted ΔP_A and from the triangle $C_1C_2C_2'$ we get

$$\sin \Delta P_A = \frac{\Delta A}{\Delta t} \cos \eta$$

This correction is generally dominant below altitudes of 15°, when $\Delta P_A > 0.1°$. With respect to image quality we can fairly well use heliograms

taken even at low altitudes, sometimes as far as 6° or so. This is why the correction ΔP_A is very important.

We are grateful to I.Nagy who called our attention to the conditions that the shift of the solar disc due to change in refraction between the two exposures of a zero heliogram at low altitudes might not be negligible.

In the zero heliograms for 1977 only a part of the solar disc was visible and it was not possible to measure directly the vertical and horizontal solar diameters to determine the actual values of the differential refraction. Nevertheless all measurements of positions in the zero heliograms have been reduced by taking into account the effect of differential refraction, too. For this purpose, as well as for the correction ΔP_A Bessel's (visual) mean refraction table as republished in *Landolt-Börnstein Numerical Data etc.* {New Series, Group VI, Vol.1, p.49, 1965} was used. (Cf. also part (3a) of Section 5.)

ΔP_o *determinations*: In so far as in a perfectly mounted heliograph the position of the spider-wires as well as the heliograph itself suffered no change at all, then the determined zero position angle ΔP_o could be used once and for all. However, if the polar axis of the equatorial mounting of the heliograph does not point exactly to the celestial pole and the declination axis is not perfectly perpendicular both to the polar axis and to the optical axis, then ΔP_o will also depend on the hour angle of the Sun (t_o) and it should be determined accordingly. Unfortunately the frame of the spider-wires has to be removed for cleaning of the magnifying lens system or for insertion of a new wire; furthermore other parts of the heliograph and its mounting also need some repairing from time to time. These circumstances may produce a change in ΔP_o and therefore we have regularly taken zero heliograms at various hour angles on several days, as shown in the following table for the year 1977.

For each "undisturbed" period of zero observation the most probable values of ΔP_o as a function of the hour angle (t_o) were estimated with a curve by a graphic method. If the ΔP_o-curves for two or more subsequent periods were parallel with each other in fairly good approximation, then for a longer period by superposition a joint mean ΔP_o-curve has been determined by quadratic least squares estimation. Thus, for the Debrecen observations, a single one, while for the Gyula observations three mean ΔP_o-curves could be used, as indicated in the table for the year 1977.

The periods of zero observation	Number of days with zero obs.	Max.numb. of zero obs. on a day	Total number of zero obs.	Dates of potential change in the heliograph: Wire frame removed for cleaning	Wire frame removed for insertion of a new wire	Reparation	Earthquake
in *Debrecen*							
Jan.1 - 18	9	7	37	Jan.19			
Jan.19 - March 4	19	8	54				March 4 (evening)
March 5 - 27	19	7	66			March 28	
Apr.1 - June 22	40	8	123				
(Jan.1 - June 22)	(87)		(280)				
in *Gyula*							
May 4 - 6	3	14	29	May 6			
May 7 - 20	12	19	60	May 20			
May 20 - 23	4	14	43		May 24		
May 24 - June 2	6	23	51	June 2			
June 3 - July 7	13	14	72	July 8			
July 8 - Aug.9	4	21	62	Aug.10			
Aug.10 - Sep.2	3	19	41			Sep.2	
Sep.3 - 19	1	9	9		Sep.20		
Sep.21 - Oct.10	4	20	30			Oct.10	
Oct.13 - 16	4	8	20			Oct.17	
Oct.17 - 31	3	12	14		Nov.1		
Nov.4 - Dec.31	6	26	47				
(May 4 - Dec.31)	(63)		(478)				

For the shorter periods within a longer one the expressions of

$$\Delta P_o = a + bt_o + ct_o^2$$

differ from each other only in the constant a. (Since in our heliographs the optical axis was not perfectly perpendicular to the declination axis, we also had a slight difference in a between observations taken on the east and west side of the pier.)

In Figure 7, as an example, for a longer period a set of ΔP_o - observations (280) is plotted, where the solid line represents the mean curve, while the dashed lines show the standard deviation.

The asymmetry reveals an azimuthal error in the polar axis, as the heliograph in Debrecen was in place after a rush temporary installation.

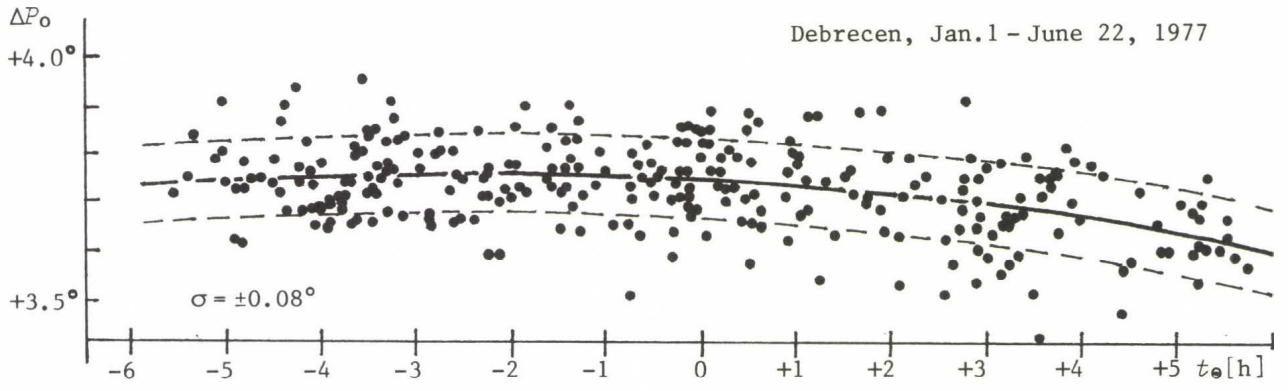


Fig.7

The three mean ΔP_0-curves of the Gyula heliograph are fairly symmetric to the zero hour angle. In the first month ΔP_0 was constant, as well, as it should be in case of a well-mounted parallactic telescope. However, the ΔP_0 - curve became slightly concave down, probably due to a change in inclination of the polar axis for the last five months of the year. (Cf. the last paragraph of Section 3.1.)

Notwithstanding that each zero heliogram was taken with great care, there is always a considerable scattering among the individual ΔP_0-data, as seen in Figure 7, too. This is due to wind, scintillation, etc. Consequently, it is indispensable to use a lot of observations for finding reliable values of ΔP_0.

The measurement and reduction of positions in the zero heliograms were carried on practically in the same way as described in Sections 4 and 5.

3.4. Co-operating observatories

At the *Kislovodsk Observatory* the heliograph has a negative lens close to the (doublet) objective. Its 13 cm aperture was used with a diaphragm of 5 cm. The effective focal length of this optical system is 8 m and has very small distortion. An image of the Sun about 8 cm in diameter was photographed without any filter on glass photoplates (ORWO FU-5) of 9×12 cm size. The effective wave-length of the solar image is 410 nm. For orientation there is an east-west directed metal wire just in front of the photoplate.

The solar photographs (on plane films of 24×24 cm size) received from the *Kodaikanal Observatory* were obtained in the same way as the ones used in RGO to fill in gaps for the Greenwich Photoheliographic Results during the former years (even for 1976). At Kodaikanal the objective aperture was

15 cm and the diameter of the solar image was about 19 cm. In the primary focus of the heliograph there is one wire fixed parallel to the celestial equator.

At the *Ebro Observatory* the solar photographs were taken as it is required for their sunspot catalogue. Up to date the last volume was published for the year 1970. {*Boletin del Observatorio del Ebro, Vol.LVIII.*, Tortosa, 1976; cf. also P.M.Balcells, L'observation solaire, *Mém.Obs.Ebro*, No.2, pp.1-34. 1909.} The Ebro heliograms used by us were taken on plane films of 13×18 cm size and had an image of the Sun of about 10 cm in diameter. The exposures were made with a slit moving in an east-west direction and its traces on the film could be used for orientation.

The position measurements on the foreign heliograms were reduced in the first approximation by using the orientation seen in the heliograms. In order to find the precise orientation of the heliograms of the foreign co-operating observatories it was necessary to measure the extra heliograms mentioned in Section 2.1. If the positions, measured on both the foreign and our heliograms taken on the same day, are in good agreement, then we can also reduce the other foreign heliogram taken at the same observatory on the preceding or following day accordingly. In so far as there are some differences in the positions between the two heliograms then from the differences the actual value of ΔP_0 can be determined.

The geographical positions of the co-operating observatories are as follows:

	LONGITUDE (East of Greenwich) λ	LATITUDE (North) φ	ALTITUDE above sea level
	h m s	° ′	m
Ebro	0 01 58	40 49.2	50
Gyula	1 25 05	46 39.2	135
Debrecen	1 26 29	47 33.6	135
Kislovodsk	2 50 07	43 44.0	2130
Kodaikanal	5 09 52	10 13.8	2343

4. MEASUREMENTS

The *position* measurements were carried out by means of an ASCORECORD (3DP) coordinate measuring instrument of Zeiss (Jena). Rectangular coordinates x , y were directly recorded through an interface made at the Institute of Experimental Physics of the Kossuth University in Debrecen.

First of all, it is essential to measure some principal points in all heliograms. These are the centre of the cross-wires and at least 8 points along the limb of the Sun's disc, namely the four intersections of the cross-wires with the limb, furthermore the ends of the vertical and horizontal solar diameters. (Previously the latter four places just outside the limb had been marked with a needle.)

The position of the centre of each umbra in every sunspot was measured one by one, considering even any tiny dark core if it is quite alone in a penumbra as an umbra. In all those cases where it was not possible to see any umbra in a sunspot the position of the geometrical centre of the spot was measured for each spot, also one by one. Exceptions were taken only in cases of two or three very little close spots of about equal areas. Furthermore, not only the well separated umbrae or spots but even those which were temporarily bordered on were measured one after the other.

The sunspot *areas* were determined by means of a special area measuring instrument "DAREAL" using video facilities and also made for us at the Institute of Experimental Physics here in Debrecen.

In all cases where the positions were previously recorded, both the umbra and the whole spot (umbra + penumbra) area were measured directly in the heliograms. By using the actual predetermined radius of the solar image we get the Projected Areas $[U_p, (U+P)_p]$ expressed in millionths of the Sun's apparent disc. The Projected Areas multiplied by $\frac{1}{2} \sec \rho$, where ρ is the relevant angular distance from the centre of the apparent disc as viewed from the Sun's centre, are the Corrected Areas (U, U+P), i.e. the areas corrected for geometrical foreshortening, expressed in millionths of the Sun's visible hemisphere.

The ASCORECORD coordinate measurements of positions are recorded to two decimal places of the millimetre. Nevertheless the final results in heliographic coordinates are given only to the first decimal place of a degree.

The results of coordinate measurements over a pair of heliograms (cf. the paragraph before last in Section 2.1) agree in the overwhelming majority of cases, or have a difference of not more than 0.1°. (For more details on the errors in heliographic coordinates see on pp. 211 - 217.)

The DAREAL area measurements are recorded to the first decimal place of the area unit; however, in the final area results given in the catalogue no decimal number is used. For all that in a few special cases even an area less than the corrected area unit is given as U+P = 1 or U = 1 where it seems to be significant (cf. Section 6).

In a 10 cm image of the Sun's disc the diameter of a circular projected area unit is 0.10 mm; this distance corresponds approximately to 0.1° in heliographic coordinates around the disc centre, or to 1.7 arc sec. (The theoretical resolving power in our own heliograms is between 0.9 and 1.7 arc sec.)

The corrected area unit is $3044 \cdot 10^3$ km^2 on the Sun, considering this area as a circle its radius is 984 km, i.e. 0.08° heliocentric angle.

The accuracy of a single measurment of a sunspot area is inferior to that of the position measurement. The areas depend much more on seeing and darkening of the image than the positions. (On account of a difference in spectral regions we could find no distinction between the foreign heliograms and ours.) For some guidance: the estimated errors expressed in percentages of the here published Corrected Area data may amount to approximately

50% for $U \approx 2$, 10% for $U > 20$,
20% for $U+P \approx 2$, 5% for $U+P > 100$ (corrected) area units.

However by approaching toward the solar limb, at large ρ ($> 70°$), there is an additional uncertainty as the factor *sec* ρ increases rapidly. (About our area measurements see the paper on pp. 219 - 230.)

All positions and areas were measured by Á.Kovács and O.Gerlei, respectively.

5. REDUCTION OF THE COORDINATES

The heliographic coordinates are calculated from the rectangular Cartesian coordinates x_A , y_A , measured in the ASCORECORD by means of the following algorithm. (A left-handed coordinate system is always used where the positive x- and y-axes should be directed toward east and north, respectively.)

(1) All coordinates x_A , y_A are transformed into a system of coordinates x_o , y_o through a rotation with the angle $\Delta P_o + \alpha$ and a linear translation which takes its origin in the point of intersection of the wires (O). The angle α is the angle of intersection of the northern wire and the y_A-axis.

(2) The coordinates x_o , y_o should be corrected for plate inclination and distortion according to Section 3.2 (see p.18 and p.22).

Rotating the coordinate system by the angle $P_{\varepsilon e}$-90° to get the coordinates x_1 , y_1 and by using the formulae (3.2.1) and (3.2.2) we obtain x_2 , y_2 and x_3 , y_3 , respectively. Then follows a rotation back to the coordinate system x_o , y_o.

Because of the corrections applied for plate inclination the coordinates of the intersection point of the northern wire with the solar limb (which was used to determine the angle α) could have a small change; therefore the angle α may also have a slight change $\Delta\alpha$. Then rotating by $\Delta\alpha$ the coordinate system, its positive y-axis will be directed exactly north.

Using the so-corrected x_o,y_o coordinates of all points measured on the limb a least squares solution for a circle gives values for the radius and centre position of the Sun's disc (a).

(3) A linear translation of the coordinate system takes its origin from the centre of the cross-wires (O) into the centre of the Sun's disc (a) and the coordinates into x_a , y_a . Then the coordinates should be corrected for atmospheric refraction.

(3a) By means of immediate measurement of the vertical ($2R_V$) and horizontal ($2R_H$) actual diameters of the Sun's disc, the effect of the differential refraction can be eliminated, i.e. the distortion due to the difference in refraction between the centre and any other point of the disc.

The y-coordinates of all disc points in a system of coordinates which have their origin in the centre of the disc and their y-axis lies in the vertical diameter, have to be multiplied by the measure of differential refraction, i.e. R_H/R_V .

However in rare cases we had to make distinctions between the upper (R_{Vn} , i.e. the "northern") and lower (R_{Vs} , i.e. the "southern") vertical

radius, since at low altitudes ($5° < h \leq 11°$) the change in atmospheric refraction (ΔA) is already significant along the vertical diameter and the true centre of the Sun's disc does not coincide with the middle point of the vertical diameter ($R_{Vn} > R_{Vs}$). Let ΔA_n and ΔA_s be the change in refraction along the radii R_{Vn} and R_{Vs}, respectively. Then from $\Delta A_n/\Delta A_s = R_{Vs}/R_{Vn}$, where $R_{Vs} + R_{Vn} = 2R_V$, the R_{Vs} and R_{Vn} are calculated by using the same mean refraction data mentioned in Section 3.3. The distance between the "apparent" and the "true" centre of the disc is $\frac{1}{2}(R_{Vn} - R_{Vs})$.

The position angle (η) of the upper half of the vertical diameter of the Sun's disc is calculated from

$$\sin \eta = \frac{\sin t_o \cos \varphi}{\cos h}$$

$$\sin h = \sin \delta \sin \varphi + \cos \delta \cos \varphi \cos t_o$$

where h is the altitude above the horizon, t_o the hour angle and δ the declination of the Sun, and φ is the geographical latitude of the observatory.

(3b) To make the corrections simple for differential refraction the coordinate system has temporarily to be rotated by the angle η so that the positive y-axis should coincide with the upper vertical radius of the Sun's disc.

At first only the coordinates of the limb points are corrected. (If $h \leq 11°$, $\frac{1}{2}(R_{Vs} - R_{Vn})$ should be added to the y-coordinates before correction.) Using the corrected coordinates of the limb points a repeated least squares solution for a circle give the definitive radius (R) and centre of the Sun's disc (c).

Of course one should find $R = R_H$; nevertheless insignificant differences may occur. Henceforward the values of R are used as they are based upon many more measured points than the R_H. On the other hand, the centre a coincides with centre c except when $h \leq 11°$. (For the year 1977 we had to use heliograms obtained at $h \leq 11°$ on 21 days. This is the reason why the most general procedure of reduction is treated here.)

Then all spot coordinates can be given in a coordinate system which has its origin in the centre of the Sun's disc (c). Now correcting the coordinates for differential refraction, as described above, the final coordinates x, y are obtained.

(4) The sunspot positions on the Sun's disc in polar coordinates are

$$r = (x^2 + y^2)^{\frac{1}{2}} \qquad P_r = \operatorname{arctg} \frac{x}{y}$$

The position angle P_r is measured from the north point of the disc and are

reckoned eastward positive, westward negative from 0° to 180°, i.e. in the same sense as P_o , the position angle of the north end of the Sun's axis of rotation.

The heliographic coordiantes of a point on the Sun's surface are defined with reference to the solar equator and are calculated in accordance with R.C.Carrington. {*Observations of the Spots on the Sun*, London, 1863.}

The heliographic longitudes (L) are measured from the solar prime meridian that passed through the ascending node of the solar equator on the ecliptic on 1854 January 1, Greenwich mean noon, J.D. 2398220.0; they are reckoned from 0° to 360°, in the direction of rotation, i.e. on the disc from east to west. (Carrington's zero meridian passed the ascending node 12 hours earlier.) The heliographic latitudes (B) are reckoned from the solar equator, positive towards the north.

The heliographic longitude (L_o) and latitude (B_o) of the central point of the Sun's disc, as well as the P_o position angle are taken from *The Astronomical Ephemeris for the year 1977* {H.M.Stationary Office, London, 1975} . They are calculated with the elements determined by Carrington {1863, loc.cit. pp.221 and 244}. Thus, the following are assumed:

- sideral period of rotation: 25.38 mean solar days;
- inclination of the solar equator to the ecliptic: I = 7°15';
- longitude of the ascending node to the solar equator on the ecliptic: $\Omega = 73°40' + 50.25" (t - 1850.0)$, where t is the time in years.

Hence $\Omega = 75°26.4'$ for 1977.0 . (In Figure 9 the angle $Q_1NQ_2 = I$.)

The spherical coordinates of a sunspot are calculated from the polar coordinates r, P_r as follows:

In Figure 8 let ρ and ρ′ be the angular distances of a spot S_s from the middle of the visible solar hemisphere C_s , as viewed from the centre of Sun and from the Earth, respectively. Furthermore let CS be the distance of the spot (r) from the centre of the Sun's apparent disc, CD the radius of the disc (R) and the angle $C\hat{S}D$ the semi-diameter of the Sun (R_o), as given in the *Ephemeris*.

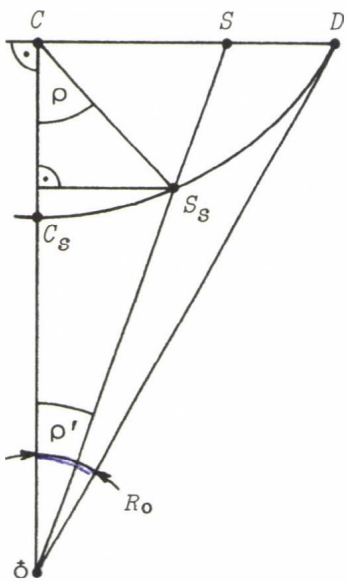


Fig.8

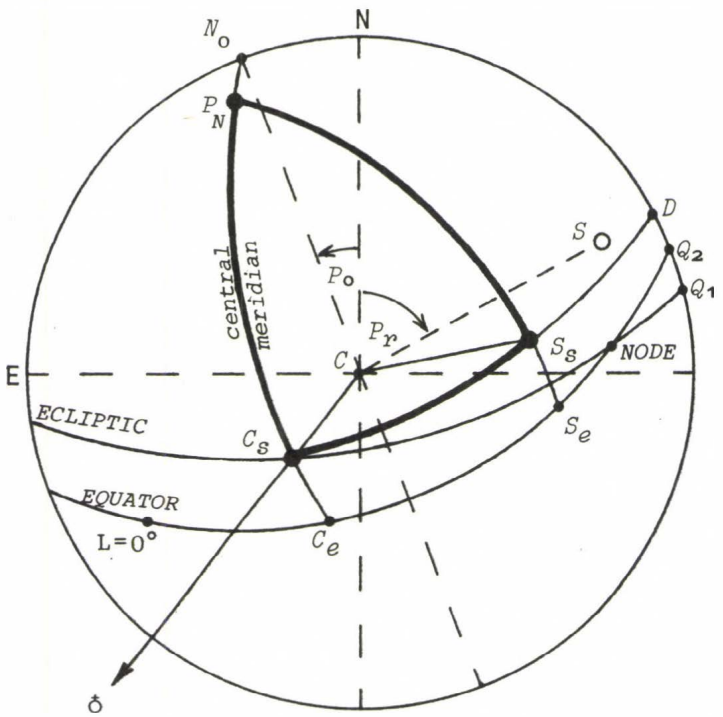


Fig.9

From the triangles $C\,\hat{o}\,D$, $C\,\hat{o}\,S$ and $C\,\hat{o}\,S_s$ (as $\rho' < R_o \leq 0.272°$)

we get $\rho' = \frac{r}{R} R_o$ and $\sin(\rho + \rho') = \frac{r}{R}$,

hence

$$\rho = \arcsin\frac{r}{R} - \frac{r}{R} R_o$$

In Figure 9 let the curved lines represent great circles on the solar hemisphere and let the dashed lines be on the solar disc. (All points marked in Figure 8 can also be found in Figure 9; S_s on the surface will be seen on the disc at S.) P_N is the (north) pole of the solar equator (Q_2, S_e, C_e), and on the great circle (P_N, C_s, C_e), called the central meridian, C_s is the pole of the great circle E, N_o, N, D which defines the solar limb. ($P_N S_s S_e$ is the solar meridian through S_s.)

In the spherical triangle $S_s P_N C_s$, the three sides and two of the spherical angles are the following:

$S_s P_N = 90° - B$, as $S_s S_e = B$ according to definition of the heliographic latitude,

$P_N C_s = 90° - B_o$

$C_s S_s = \rho$

$S_s P_N C_s = (C_e S_e =)\ L - L_o = L_{CM}$ the longitude from central meridian, being reckoned westward positive (eastward negative),

$P_N C_s S_s = (DN_o =)\ P_o - P_r = \vartheta$ this position angle ϑ is measured from the north pole (N_o) of the Sun's axis in the same sense as P_o and P_r.

Then using the cosine- and sine-formulae of spherical trigonometry and considering that $sg\ L_{CM} = -\ sg\ \vartheta$, we have

$$\sin B = \sin B_o \cos \rho + \cos B_o \sin \rho \cos \vartheta$$

$$\sin (L_o - L) = \sin \rho \sin \vartheta \sec B$$

All calculations of B, L, L_{CM}, ϑ and r/R were performed by the PDP 11/40 computer of the Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen.

6. DATA PRESENTATION

Notwithstanding that almost every detail of all sunspot groups was separately measured, the results of measurement are generally not given with full particulars.

Thus, in the Catalogue, only the groups lasting for two or more days are included. The one-day groups are omitted from this publication (nevertheless their list is available on request). However, the most important data of those 11 one-day groups which emerged not too far off from another group are given in the *"Notes on Sunspot Groups"*. On the other hand, a very little spot whose area is less than the corrected area unit is only given when it is either the first or the last day of observation of a spot lasting for two or more days; furthermore a tiny umbral area ($U < 1$) is only given if any other umbra is not at all seen in the penumbra (cf. Section 4).

The *basic data set of the Catalogue* consists of data of individual units of single spots and of two or more spots close together combined into a small cluster on the basis of direct measurements. By way of explanation Figure 10 shows characteristic examples.

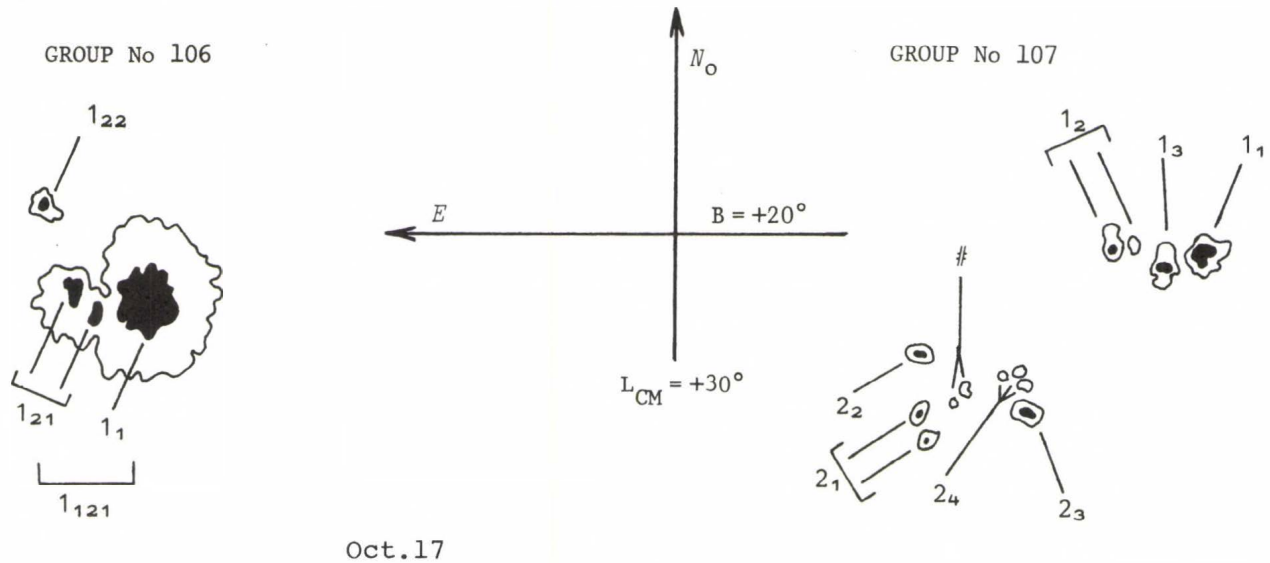


Fig.10 Sunspots in a portion of the Sun's disc drawn to scale by way of illustration. (The distance between spot 1_{22} of group 106 and spot 2_2 of group 107 is one tenth of the diameter of the Sun's disc.)

The short lines pointing to spots indicate the direct measurements. The branching lines call attention to the fact that only the position of the centre of gravity and the aggregate area were measured, although two and three little spots are recorded (# and 2_4, respectively). Linking marks (⌐¬) denote that the sum of areas and the weighted mean of the separate position measurements are to be found in the Catalogue; for whole spots (as for 1_2 and 2_1) U+P areas, for umbrae (as for 1_{21} and 1_1) U areas were used as weights. In the same way all other (combined) joint positions given in this publication are calculated as weighted arithmetic averages.

All individual units of spots which have been traceable from one day to the next got a special numbering as a mark of identification. When there is more than one umbra within a spot, the umbrae also are similarly numbered in several cases, if reasonable (e.g. in spot 1_{121}). Our numbering indicates the spot developments in a fairly good approximation, too. (Identification without any mistake is only possible if a long series of observations are available for each day.)

Distinctions were made between the spots of *p*- and *f*- polarity by designating them with odd and even numbers, respectively. Within a group a pair of consecutive large numbers (2n-1, 2n) and in general additionally small index numbers are used for all spots which may be somehow associated with one another.

Sunspots are generally arranged into groups according to old traditions and we felt obliged to follow these conventions within reasonable limits. However, taking into account the fact that the sunspot group is essentially a magnetic field system, we tried to deal with the groups in accordance with their *magnetic properties*, as far as available polarity determinations permitted.

The majority of sunspot groups clearly reveal a simple bipolar character even when one or both of its parts consist of several not too distant spots of the same magnetic polarity appearing to be connected, or the group seems to be "unipolar". (Cf. Fig.10.) Supposing that generally all extended groups can be considered as being made up of several simple bipolar groups (i.e. in reality they are "multiple" bipolar groups) we attempted to identify the individual connected pairs of spots of different magnetic polarity. A so-called "complex" group can also be divided into several simple bipolar related spot pairs, i.e. groups; and the magnetic complexity arises mainly from spot motions and new spot emergence within the group. In accordance with the above, in some cases it was possible to distinguish neighbouring groups which at first sight appeared as one.

The *Daily Results* gives, in addition to areas (U, U+P) and coordinates ($B, L, L_{CM}, \vartheta, r/R$), various other data. Mention must be made of the NUMBER OF SPOTS divided according to a new importance category and the one-letter classifications introduced for the larger umbrae and penumbrae. The number of umbrae ($U \geq 2$) in reality are the number of concentrations of considerable magnetic flux or to be more exact the number of local relative maxima of the magnetic field. Moreover, a daily pictogram shows the main character of each sunspot group using an extended version of McIntosh's classification. Furthermore, whenever there is an average position given for two or more spots then fuller particulars of the area distribution around the average position may be found in column EXTRA DATA.

A detailed description of all data presented is comprised in the *"Explanations to the Sunspot Catalogue"*.

The numeration of the synodic solar rotations is in continuation of Carrington's series (loc.cit.), No.1 being the rotation commencing on 1853 November 9. (The mean synodic rotation period is 27.2753 days.) The commencement of each rotation is defined by the coincidence of the assumed prime meridian with the central meridian.

Particulars in reference to the *Summaries of Results* are given in the headings of the tabular data and in some brief notes there. Nevertheless, it is worthwile to call attention to the reason why in Section 3.2. of the Summaries the observations relating to the limb zones were disregarded.

Unfortunately the confidence limit of the optical sunspot observations is at the farthest approximately at the 60° longitude distance from the central meridian. Nearer the limb the simple area corrections used for geometrical foreshortening are generally by no means enough and there is no way known of correcting the still inaccurate values.

It has been shown long ago that both the number and the total (corrected) areas of groups diminish from the Sun's disc center towards the limb, and this is more pronounced for smaller groups. This observational evidence has no reasonable physical explanation; especially in the cases when a small spot approaching the limb becomes invisible it is "difficult to decide whether, when nearer the limb, the spot was non-existent or had been merely overlooked through the dwarfing effect of the foreshortening or had been hidden by masses of surrounding faculae." {Annie S.D.Maunder, Catalogue of Recurrent Groups of Sun Spots for the years 1874 to 1906. *Appendix to Greenwich Observations, 1907*, p.6, 1909.} The used limit of 60° (more exactly $\rho = 60°$) are supported by the data given in one of our earlier papers. {L.Dezső, (in § 8 of) Statistical Investigations of Sunspots, *Publ. Debrecen Obs. No.1*, pp.42-50, 1964.}

DAILY RESULTS

Positions, Areas and other Characteristics

of

SUNSPOTS

for each Day in the Year 1977

1. Explanations to the Sunspot Catalogue
2. Catalogue of Sunspots 1977
3. Notes on Sunspot Groups

Daily DATA of ALL SUNSPOT GROUPS LASTING for TWO or MORE DAYS
are tabulated

EXPLANATIONS TO THE SUNSPOT CATALOGUE

DATA ARRANGEMENT ACCORDING TO LINES

The principal data of a sunspot group (each group taken as a whole) are given in a single underscored line marked with the GROUP No, the serial number of the group of sunspots. Also in this line of the group a *pictogram* shows roughly the main characteristics of the relative crowding of different spot areas and their magnetic polarities within the group; next to the pictogram sometimes a δ calls attention to an important pecularity too. (For detailed explanations, see p. 46.) Furthermore there is a *special marking* next to the GROUP No if the series of data relate to the first or the last day of observation of the group in the course of its passage over the solar disc.

Distinctions have been made on the one hand to know whether the first appearance of the group took place on account of a new spot emergence (↑), or whether it occurred as a preexisting group rotated onto the disc (|→); on the other hand it is shown whether the overnight disappearance of the group came true as the group indeed died out (↓), or the Sun's rotation carried it over the western solar limb (→|).

Generally, after the line of the group, (unless the whole group consists entirely of spots of a single polarity) in two consecutive lines the total data of spots of opposite magnetic polarity are separately summarized; usually the data of the western and the eastern spots of the group, i.e. that of the preceding and following spots in sense of solar rotation, namely the *p*- and *f*-parts of the group, are strikingly indicated with the adequate letters *p* and *f*, respectively.

When the *p*-part (or the *f*-part) of a group consists of only one isolated single spot, or one isolated cluster of near-by spots, then next to the corresponding letter *p* (or *f*) a large black dot (•), or a similar but crossed off dot (⧫) show these facts conspicuously.

The lines of the spots follow that of the group and its *p*- and *f*-parts (i.e. they start as the third line below the underscored, or just after it when all spots in the group are of the same polarity). In each one of these lines the data relate to an individual unit of spots, which is either a single spot or a single small compact cluster of near-by spots of uniform or various kinds and sizes. (Such a "cluster" of spots maybe formed of two or more spots not too far-off, or one large spot with close tiny companions, or another configuration of spots of the kind.)

When two individual spots came into contact with each other (i.e. their penumbrae border, or they apparently have a common penumbra) and the spots have opposite polarities, or are members of different bipolar pairs, then such a pair of spots are still given one by one in separate lines.

If reasonable, sometimes lines of the umbrae are also added to data for some important umbrae within a common penumbra; these are separately given in the end of the series of data of groups, i.e. in the last lines marked with the letter *U*.

In line with the calendar date are the ephemeris data for physical observation of the Sun and some global data on daily spot activity for the time of photograph:

In braces are the heliographic latitude $\{B_0\}$ and longitude $\{L_0\}$ of the centre of the disc, and the position angle $\{P_0\}$ of the northern extremity of the Sun's axis of rotation measured eastward from the north point of the solar limb (on the basis of *The Astronomical Ephemeris for the year 1977*).

The last two numbers (in the column under **EXTRA DATA**) are the daily total Projected Areas of sunspots, that of the umbrae (ΣU_D) and the whole spots (i.e. umbra + penumbra areas: $\Sigma(U+P)_D$, where the summation includes all spots of the day). The Projected Area is the area as it is measured on the photograph, uncorrected for the effect of geometrical foreshortening and expressed in millionths of the Sun's apparent disc.

The first two numbers (immediately after the date) show the number of sunspot groups (g) and the Debrecen relative sunspot number $R_D = 10\,g + 10^{-2}\,2\,\Sigma\,(U+P)_D$.

The rest of numbers are daily sums of data referring to page headings of the relevant seven columns.

The lines with the calendar date of month and day conclude the daily data. The lines of the groups for each day are arranged according to GROUP No. The lines of spots of a group are in order diminishing heliographic longitudes as are the umbra data if they are separately on record.

All data of observation are to the minute given. Consequently this also applies exactly to the cases where it may be read: "No sunspots at all" or"No sunspot groups lasting for two or more days". The latter statement means that at least one ephemeral true spot could have been seen at the moment of observation. In both cases all areas and numbers of spots evidently come to zero, although not explicitly indicated. (In addition, for the sake of lucidity, empty spaces are used to represent the non-existent spots in all tables left of the vertical dividing lines.)

The data in the lines of the spots and those in the lines of the p- and f-parts of groups denoted with a large black dot (• or ⧫) should be considered as the basic data set of direct observational results. Among these data all those are enclosed in parentheses which might be less certain or possibly erroneous either in quantitative, or in qualitative (e.g. in identifying) respects. (Data of this sort are mostly the data of spots observed too near the solar limb.)

DATA ARRANGEMENT ACCORDING TO COLUMNS

(disregarding data in the line of calendar date)

DATE

OBS UT Time when photograph was taken, expressed in days and decimals of a day reckoning from 0^h Universal Time at commencement of year. Place of observation, given by the one letter abbreviation of the abridged name of the observatory where the used heliogram was obtained: Debrecen (D), Gyula (G), Kislovodsk (K), Kodaikanal (I), Ebro (E). Hours and minutes of observations in UT /between solidi/, as well as the calendar month and day for convenience of reference. (Carrington's numeros of synodic rotation commencements are also indicated.)

GROUP

No Serial number of sunspot groups, numbered in order of appearance of the group, proceeding from the west.

No 1 being the group that appeared on the solar disc on January 1, 1977; the same day only one other group was observed designated by No 0 (cf. p.48). Each group retains its No once and for all during one disc passage, even if it reveals intermittence for some days. The No of an intermittent group on the day of intermittence is in a pair of solidi.

SPOT

SIGN Spot(s) designation, a special numbering as a mark of identification for all spots which have been traceable from one day to the next. The *p* polarity spots are denoted by odd numbers and that of the *f* polarities by even numbers. If at all reasonable or convenient, generally one to two-three digits of small index numbers are also added (but these small numbers are used regardless of polarity).

The system of designation becomes clear from the following examples: if two spots 1_1 and 1_2 merge, the common name of the united spots will be 1_{12}; after the coalescence of spots 1_{12} and 1_{34} one may speak of spot 1_{1-4}; when there are several smaller companion-spots near a larger spot 1 then sometimes some of them are also called spots $1_1, 1_2, \ldots$ and such a designation may be used especially when spot 1 is in decay and the spots 1_1 and 1_2 are its separated fragments; or similarly, if spot 7_2 divides in two, 7_{21} and 7_{22} may be given for the new names of the spots. Otherwise, as a rule: the very same large number is used for all spots which may be somehow associated with one another. Two spots of a supposed bipolar pair of related *p* and *f* spots are denoted by a pair of consecutive numbers (e.g. 1-2, 5-6; cf. p.36).

MAGN

POL North (*N*) and south (*S*) magnetic polarities according to immediate magnetic observation in the overwhelming majority of cases.

When the polarity has been determined by way of spot identification from an actual magnetic observation performed one day earlier or later, as well as in those rare occurrences when the polarity was decided through the proper motion of the spot, then an apostrophe (') shows this circumstance. The polarities for little, tiny and less important spots, in many instances, have never been verified individually, and for this reason the wanted po-

larities have to be concluded from the surrounding spots of known polarities. In such a case the recorded spot polarity has a half parenthesis to the right and this is also true when a simple statement about the polarity is based only upon the spot position within the group.

A bracket marks each δ-case, i.e. two close umbrae of opposite polarity if they presumably form a δ-configuration (cf. p.46).

NUMBER OF SPOTS

U m s y x Numbers of umbrae and of distinctively separated individual spots arranged into four classes of importance, categorized according to the umbra areas (U, corrected for geometrical foreshortening and expressed in millionths of the Sun's visible hemisphere).

U - Number of definitely separated umbrae of $U \geq 2$.
Among the additional data for umbrae, i.e. in lines of *U*, the number of $U = 1$ umbrae are also given, between solidi.

Next to the number of umbrae a one-letter abbreviation indicates the main character of distribution of the area of umbra(e) within each penumbra if the spot is important enough:

c : compact umbra, outskirts roughly circle or oval;

b : broken, but still compact;

1b: single umbra with one or more clefts but the area continuously uninterrupted;

d : three or more umbrae irregularly dispersed, or two far-off umbrae;

e : one larger umbra dispersedly surrounded, at least partly, by two or more relatively smaller umbrae;

t : train of a linkage-like sequence of three or more umbrae of generally unequal areas, roughly lined up.

m - Number of major and middle-size individual spots defined as $\Sigma U \geq 16$

s - Number of small individual spots defined as $15 \geq \Sigma U \geq 2$, including at least one umbra of $U \geq 2$.

In both cases the summation includes all umbrae within the penumbra as well as the $U = 1$ umbra areas.

Next to the number, if reasonable, a one-letter abbreviation supplies information on the most conspicuous feature of the penumbra:

r : regular, i.e. umbra area all enclosed in a ring-formed penumbra roughly symmetrical as compared to the umbra(e) and outer contour of penumbra distinct and continuous;

q : quasi-regular, if the above conditions are insufficiently realized, e.g. penumbra outskirts somewhere outbowed or serrated;

p : partially regular, if outer contour of penumbra over a not too small segment indistinct and discontinuous notwithstanding the greater part of penumbra shows the regular type;

n : nebulous, i.e. penumbra more or less diffused and the contours mainly indistinct;

continued

(continued)

u : undefined penumbra, e.g. when the spot is close to the solar limb, or undefinable - the penumbra of a spot apparently shares a common penumbra with another spot;

a : asymmetric penumbra around the umbra(e); this terminology is only used if asymmetry is the most remarkable feature beyond the ones specified in the above (most often a spot of q-type has to be classified as an a-type);

a*: mark the spots which strikingly show the Wilson-effect.

y - Number of little spots which have only U = 1 umbra(e). Any spot with a tiny dark core has been considered as y-spot; they hardly comprise more than one U = 1 umbra.

x - Number of spots without any dark core.
They are in overwhelming majority very little spots.

U U+P
area Both kinds of area, that of the umbra (U) and the whole spot, i.e. umbra+penumbra (U+P) areas, corrected for geometrical foreshortening and expressed in millionths of the Sun's visible hemisphere.

The areas are the sum of areas of all m-, s-, y- and x-spots indicated within the same line. (Instead of a "zero" umbra area there is a hyphen printed.)

A spiky bracket interconnects the U+P numbers at the right side if the outskirts of two or more spots were in contact. When at the same time, the common outlines of penumbrae got blurred and it was no longer possible to measure in a satisfactory manner separated areas of U+P, then left of the estimated area data the half parentheses mark these spots.

$B°$ $L°$ $L_{CM}°$ Heliographic latitude, Carrington's heliographic longitude and longitude from central meridian ($L_{CM} = L - L_o$).

$\vartheta°$ r/R Position angle, measured eastward from the north pole of the Sun's axis and distance (r) from the Sun's disc centre in units of the Sun's measured radius (R) (the first zero digit omitted).

For all individual m-, s- and y-spots their (B, L, L_{CM}, ϑ and r/R) position data are in fact umbra positions, even if the spot has more than one umbra. In the latter case the positions are weighted arithmetic averages, calculated on the basis of the measured positions and areas of umbrae, including also the umbrae of U = 1; the umbra areas were used as weights.

Concerning two or more individual spots of any collectivity of m-, s-, y- and x-spots, specified in the column NUMBER OF SPOTS, their global (B, L, L_{CM}, ϑ and r/R) position data, given in the lines of spots, are weighted aritmetic averages of the relevant individual positions but calculated by using the relevant U+P areas as weights. In the same manner (using U+P weights) are obtained on the one hand the positions of *p*- and *f*-parts of a group and on the other hand that of the group from these positions.

EXTRA
DATA

* This sign indicates that additional information is given, in the Notes on Sunspot Group, at the end of Catalogue (on pp.189-195).

continued

(continued)

× and + sign of reference. (These are not used where it is evident as to which spots are referred to in the EXTRA DATA.)

"train" This lettering calls attention to a spiky bracket, indicating spots, at least in two lines, which are considered as members of a train of spots.

LARGE NUMBERS with addition signs (+), are *umbra areas* of U ≥ 2, specified according to size; the U = 1 umbrae are not indicated, only a + sign shows if there is any.

SMALL INDEX NUMBER are *spot areas* of U+P ≥ 2 for y- and x-spots. There is no area entry for x-spots of U+P = 1.

All *areas of both kinds*, here separatedly indicated, are some parts of the areas given in one of the main area columns. However, generally there is no entry for approximately equal areas.

ARROW signifies the *direction* of a distance along the network of heliographic coordinates, horizontal arrow is for longitudes, vertical arrow is for latitudes.

LARGE NUMBER ≥5 immediately after an arrow indicates a *difference* between two spots *in longitude or in latitude* expressed in units of tenths of one degree.

If a spot Z is westwards (eastwards) of spot A the arrow points right → (left ←); and if spot Z, either of the two (northern or southern) solar hemispheres, is northwards (southwards) of spot A the arrow points upwards ↑ (downwards ↓). The distance between the two spots is given with the number, immediately after the arrow, indicating the difference (≥0.5°) in the relevant coordinates. Thus the arrow with the number ≥5 shows the location of relative positions of spots A and Z.

In this manner, if reasonable, it is easy to indicate the spot distribution within a small compact "cluster" of two or more spots in the lines of basic data (cf. the paragraph in *italics* on p. 41). The same system of presentation is also used to show the approximate distribution of umbrae of U ≥ 2.

In the cases of two spots that spot which has the greater importance is regarded as spot A, taking into consideration the m-, s-, y- and x-categories of spots as importance--categories. However when there are two spots and both belong to the same importance--categoriy, then the easterly spot has been choosen as spot A, or the more southerly, in case the difference in longitude is less than 0.5°.

In the cases of *train*-like configurations of three or more spots roughly lined up, the two most far-off spots are regarded as spots A and Z and their relative positions are indicated in the same manner as in the latter example of two spots. On the other hand, if the spot distribution is rather a good deal *random* simply the occurring greatest difference among each kind of coordinate is given and, as distinguished from the former cases, each pair of numbers, showing the coordinate differences, are underscored.

Several times the order of spots of a train, beginning from the choosen spot A, are also given. On the other hand occasionally even when the spot distribution is random, the order of spots along longitude is still indicated.

An arrow is only shown when there are two spots A and Z, and the relevant weighted mean coordinates of these spots does not differ more than ±0.1° from the coordinates of spot A. In such cases, were the above to be strictly followed, two directions should be given; nevertheless there is only a single arrow, the more important one being shown.

There is no EXTRA DATA given wherever the coordinate difference in question is less than 0.5° (i.e. <5).

PICTOGRAMS AND δ-CASES

The pictogram roughly represents the group from the (solar) east to the (solar) west (i.e. from left to right), outlining the principal distribution of the spots according to polarities and sizes. The system of picture symbols used are given in the following two tables.

THE MAIN (LARGEST) f- AND p-SPOTS OF THE GROUP

Number	Symbol	N a m e	Umbra area	Kind	
1	Δ	x-spot	U ≈ 0	rudimentary spots	(cf. p. 44)
2	∇	y-spot	U = 1		
3	◊	small (s-)spot	15 ≥ U ≥ 2	mature spots	The U applies to the sum of umbra areas within one single penumbra.
4	⌑	middle-size (m-)spot	29 ≥ U ≥ 16		
5	▮	major (m-)spot	U ≥ 30		

THE INTERMEDIATE SECTION OF THE GROUP (IF ANY)

Number	Symbol	The region around the middle of the group
6	-	One or more spots lie in the vicinity of the middle of the group while the group appears to be divided into two areas of opposite magnetic polarity.
7	ǂ	Comparable to item 6 with the difference that there are at least two spots of opposite polarity where either the polarities seem to be inverted as compared to the Hale-Nicholson Law, or the proximity of two spots is supposed to build a δ-configuration.
8	ǂ	The polarities have an irregular distribution. (The estimated magnetic inversion line is no longer an approximate straight line in the interior of the group, as generally in the cases of items 6 and 7.)
9	ǂ	Extended penumbra(e) mostly in contact with penumbra areas of the main *p* or/and *f* spots, nevertheless one of the cases of items 6-8 also holds. Sometimes the entire group is enveloped in an almost continuous penumbra area.
0	none	Free of spots (i.e. no intermediate section).

When either the *p*- or *f*-part of the group is missing, the zero applies even to the table of items 1-5, and then the number (N), introduced in these two tables, may also be used to specify in brief the leading features of a spot group. (E.g. a group regularly starts as 001, and at the time of highest flare activity /if any/ it may develop into a group of 585.)

The ideas of the classification here introduced have their background in Patrick S. McIntosh's relevant work. Beginning with the observations of December 1971 the morphological sunspot classification in *Solar-Geophysical Data (SGD)* are published according to the revised sunspot classification devised by McIntosh. {*SGD* Nr.330 (Supplement), "Descriptive Text", p.25-27; February 1971 (NOAA, Boulder, Colorado, USA); ibid. reprinted annually. Cf. also e.g. the Fig. on p.108, *IUWDS Synoptic Codes for SGD*, 3rd rev.ed. 1973.}

The main difference in classification of a (whole) sunspot group is shown as follows:

in *Solar-Geophysical Data* (McIntosh's Third Upper-Case Letter)	X (single)	O (open)	I (intermediate)	C (compact)
in *Present Catalogue* (Pictogram, equivalent to a three-digit number)	00N or N00	N0N	N6N or N7N or N8N	N9N

where N can be one of the five (1-5) numbers of the first table given above.

It can be seen that the system of classification of the present catalogue is merely a more detailed and extended version of McIntosh's system. The other characteristics of McIntosh's sunspot classification (i.e. the First and Second Upper-Case Letters in the *SGD*) have no unambiguous equivalents in the present catalogue.

Each δ sign in the present catalogue calls attention to at least one δ-configuration or to a "quasi δ-configuration". The wording δ-configuration is taken here in a wider sense than usually, not holding on strictly to the original definition.

H.Künzel introduced the name δ-group for a sunspot group when there are umbrae of opposite magnetic polarities within one penumbra area and it could be seen at once from his careful statistical data that the flare occurrences show a relative increase with the δ-groups { 1960, *Astr.Nachr. 285*, p.271 = *Mitt.Astrophys.Obs.Potsdam* No.87 }. Künzel's three unrelated samples of spot groups exhibited this behaviour and, in all probability, these correspond to the groups with intermediate sections of type 7, 8 and 9, according to the designations given above.

Since then several sporadic examples indicated that it is needless to have umbrae of opposite polarity in a common penumbra (i.e. forming a δ-spot) since the closeness of the umbrae in question is adequate to get an enhancement of the likelihood of flares. To be more exact, it became known that when two umbrae of opposite polarity which originally belonged to different bipolar spot pairs move close enough and, as a consequence of their relative motion, a magnetic shear may be formed, then, under these conditions, there is a favourable situation for flare occurrence. A similar situation may arise when near a preexisting umbra a new, generally fast moving, spot of opposite polarity emerges.

Considering the circumstances outlined above, all groups which might be favourable for triggering off flares are marked with a δ.

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
ROT No 1650																
0.462	0 p	H	S	2	1			5	24	138	-19.2	20.4	+28.5	-122.1	.534	*
D /1105/		S						1	-	5	-21.3	21.2	+29.4	-124.8	.560	
	1	S		2b	1r				24	129	-19.1	20.5	+28.6	-121.8	.535	
		S)						2	-	2	-19.4	17.4	+25.5	-125.1	.499	+8
		S'						2	-	2	-20.4	14.2	+22.4	-131.1	.469	→12
	1→p•1	(◇)	S'(1)			(1)			(-)	16	+ 3.3	271.2	-80.6	+86.1	.988	*Old C* *
Jan 1	*2*	*25*		*3*	*1*	*1*		*5*	*24*	*154*	*{-3.1}*	*{351.8}*		*{+ 1.9}*		*41 238*
1.494	0 p	H	S	1	1			5	20	126	-19.1	20.3	+42.1	-114.3	.698	
D /1151/	1	S		1c	1r				20	118	-19.1	20.4	+42.2	-114.3	.699	
		S)						2	-	2	-19.9	20.0	+41.8	-115.7	.697	→16+6
		S)						3	-	6	-18.6	19.2	+41.0	-114.0	.683	→6
	1 p•1	◇	S'	1		1			6	20	+ 3.5	270.7	-67.5	+84.9	.927	
	2↑	◇-◇		5		4		5	16	51	+32.3	19.3	+41.1	-44.2	.798	*
	p		*N*	*2*		*2*		*4*	*4*	*18*	*+31.7*	*22.0*	*+43.8*	*-46.4*	*.814*	
	f↓2		*S'*	*3+*		*2*		*1×*	*12*	*33*	*+32.7*	*17.8*	*+39.6*	*-43.0*	*.789*	*+→8 ×↓*
	1	N'		1		1		1×	2	8	+31.4	23.0	+44.8	-47.4	.820	$\times_2$
		N)						3	-	3	+31.1	21.8	+43.6	-47.0	.810	→6
		N)		1		1			2	7	+32.4	20.9	+42.7	-45.1	.810	
Jan 2	*3*	*35*		*7*	*1*	*5*		*10*	*42*	*197*	*{-3.2}*	*{338.2}*		*{+ 1.4}*		*52 258*
2.447	0 p	H	S	1	1			1	20	112	-19.2	20.5	+54.9	-111.0	.830	
D /1044/	1	S		1c	1r				20	111	-19.2	20.5	+54.9	-111.0	.830	
		S)						1	-	1	-18.8	18.6	+52.9	-110.9	.810	
	1 p•1	◇	S	1		1			6	16	+ 3.6	270.9	-54.8	+83.3	.824	
	2	◇-H		6	1	1		5	33	137	+31.6	22.4	+56.8	-52.3	.901	
	p		*N*	*3*	*1*			*2*	*23*	*105*	*+31.2*	*23.9*	*+58.3*	*-53.3*	*.910*	
	f		*S*	*3*		*1*		*3*	*10*	*32*	*+32.9*	*17.3*	*+51.6*	*-49.0*	*.874*	
	1	N		3d	1q				23	102	+31.2	24.0	+58.4	-53.3	.910	
		N						1	-	2	+31.8	22.6	+56.9	-52.1	.904	
		(N)						1	-	1	+30.8	19.8	+54.1	-52.2	.883	
	4	S						1	-	2	+31.0	18.4	+52.7	-51.4	.874	
		S						2	-	7	+32.7	17.9	+52.2	-49.4	.878	+5
	2	S		3t+		1n			10	23	+33.1	17.0	+51.3	-48.6	.873	+↑11
Jan 3	*3*	*35*		*8*	*2*	*2*		*6*	*59*	*265*	*{-3.3}*	*{325.7}*		*{+ 0.9}*		*58 261*
3.434	0 p•1	◇	S	1c		1q			14	91	-19.2	20.2	+67.6	-109.3	.927	
D /1025/	1 p•1	Δ	S					1	-	8	+ 3.8	270.5	-42.1	+80.5	.681	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+U area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	2	◊-Ħ		2	1	1	1	2	26	201	+30.8	23.7	+71.0	-56.8	.969	
	p		*N*	*1*	*1*			*1*	*22*	*176*	*+30.5*	*24.7*	*+72.0*	*-57.4*	*.973*	
	f		*S*	*1*		*1*	*1*	*1*	*4*	*25*	*+33.1*	*16.6*	*+63.9*	*-53.0*	*.944*	
	1	N		1c	1q				22	175	+30.5	24.7	+72.0	-57.4	.973	
		N)						1	-	1	+31.2	20.1	+67.4	-55.8	.956	
	4	S						1	-	5	+31.7	18.2	+65.5	-54.8	.949	
	2	S		1		1	1×		4	20	+33.5	16.2	+63.5	-52.5	.943	×$_{B}$↓6
Jan 4	*3*	*34*		*3*	*1*	*2*	*1*	*3*	*40*	*300*	*{-3.5}*	*{312.7}*		*{+ 0.4}*	*23*	*178*
4.429	0→|*p*•1	◊	*S*	1		1			9	55	-19.1	20.3	+80.8	-108.7	.986	
D /1018/	1 *p*•1	Δ	*S*					1	-	5	+ 4.0	270.6	-29.0	+75.5	.501	
	2→|*f*	◊	*S*	1		1	1	3	5	36	+32.8	16.3	+76.8	-56.0	.988	
	4	S'					1	2×	1	23	+32.3	16.9	+77.4	-56.6	.989	×$_{10}$
	2	S'		1		1		1×	4	13	+33.6	15.3	+75.7	-55.0	.986	×↓
	3↑*p*	Δ	*N*					2	-	2	+20.3	231.7	-67.9	+67.1	.945	
	1	N						1	-	1	+20.6	233.2	-66.4	+66.4	.937	
		N						1	-	1	+19.9	230.2	-69.3	+67.7	.952	
Jan 5	*4*	*41*		*2*		*2*	*1*	*6*	*14*	*98*	*{-3.6}*	*{299.6}*		*{- 0.1}*	*5*	*39*
5.383	1↓*p*•(1)	Δ	*S*					1	-	4	+ 4.2	271.1	-15.9	+64.0	.306	
K /0912/	3↓*p*•(1)	Δ	*N*					1	-	2	(+21.0	234.4	-52.6	+62.0	.840)	
Jan 6	*2*	*20*						*2*	-	*6*	*{-3.7}*	*{287.0}*		*{- 0.5}*	*0*	*10*
6.315	N O S U N S P O T S AT ALL															
K /0734/																
Jan 7																
7.558	N O S U N S P O T S AT ALL															
D /1324/																
Jan 8																
8.559	N O S U N S P O T S AT ALL															
D /1325/																
Jan 9																
9.430	N O S U N S P O T S AT ALL															
D /1019/																
Jan 10																

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
10.423	4↑		◇ △	1		1	1	5	3	20	-28.8	209.2	-11.4	+157.4	.454	
D /1009/		$p\phi 1_1$	S					3	–	6	-28.1	211.1	- 9.5	+160.2	.434	→10↑8
		f	N	1		1	1	2	3	14	-29.1	208.3	-12.3	+156.2	.463	
		2_1	N	1		1			2	6	-27.6	208.8	-11.8	+155.6	.439	
		2_2	N'					2	–	3	-28.9	208.1	-12.5	+155.7	.462	↑10
		2_3	N'				1		1	5	-30.9	207.9	-12.7	+157.3	.491	
Jan 11		*1*	*11*	*1*		*1*	*1*	*5*	*3*	*20*	{-4.2}	{220.6}		{- 3.0}		*6 36*
11.522	4		◇–◇	9		6		7	32	148	-28.8	209.3	+ 3.2	-173.4	.419	
D /1231/		p	S	4		3		4	16	94	-28.6	210.4	+ 4.3	-170.8	.419	
		f	N	5		3		3	16	54	-29.1	207.2	+ 1.1	-177.8	.421	
		1_1	S	2+		2		1×	4	27	-27.8	211.9	+ 5.8	-167.4	.410	+↑8 ×4↓
		1_2	S	2		1		1×	12+	61	-28.9	210.0	+ 3.9	-171.9	.421	+6+5+ ×↑
			S)					2	–	6	-29.9	208.3	+ 2.2	-175.6	.435	↑6
		4	N'					1	–	3	-27.3	208.1	+ 1.9	-175.7	.393	
		2_1	N	1		1			4	11	-28.5	207.7	+ 1.5	-176.8	.412	
		2_3	N	1		1		1×	2	8	-30.9	207.1	+ 1.0	-178.1	.449	×2→
		2_2	N	3+		1		1×	10	32	-29.0	207.0	+ 0.9	-178.2	.419	+↑8 ×4↓
	U	2_{21}	N	1					2	–	-29.3	207.3	+ 1.1	-177.7	.424	
	U	2_{22}	N	2					8	–	-28.8	206.9	+ 0.8	-178.4	.416	
Jan 12		*1*	*15*	*9*		*6*		*7*	*32*	*148*	{-4.3}	{206.2}		{- 3.5}		*58 269*
12.257	4		⧓–▮	9	2			5	60	336	-28.6	209.8	+13.3	-153.9	.462	
K /0610/		$p\phi 1_{12}$	S	6t+	1q			1×	32	216	-28.3	211.7	+15.2	-150.5	.470	+→30×3↓
		f	N	3	1			4	28	120	-29.0	206.5	+10.0	-160.1	.447	
		4	N'					2	–	4	-27.5	208.4	+11.9	-155.1	.437	→10
		2_{1-3}	N	3d	1u			2×	28	116	-29.1	206.4	+ 9.9	-160.3	.447	×6↓
	U	2_1	N	1					10	–	-29.1	207.1	+10.6	-159.0	.450	
	U	2_{21}	N	1					10	–	-29.4	206.1	+ 9.6	-161.0	.449	
	U	2_{22}	N	1					8	–	-28.7	205.7	+ 9.3	-161.1	.438	
Jan 13		*1*	*22*	*9*	*2*			*5*	*60*	*336*	{-4.4}	{196.5}		{- 3.8}		*107 596*
13.541	4		⧓–▮	6	2			7	75	370	-28.6	210.1	+30.6	-133.3	.614	
D /1259/		p	S	3	1			3	46	220	-28.4	213.2	+33.7	-130.5	.645	
		f	N	3	1			4	29	150	-28.8	205.5	+25.9	-137.5	.570	
		1_{12}	S	3e	1p				46+	216	-28.4	213.3	+33.8	-130.4	.645	+30+4+3+
		3	S					3	–	4	-28.9	210.3	+30.7	-133.4	.618	→10↑6
		4	N					2	–	7	-28.1	208.6	+29.1	-133.6	.594	↑6
		2_{1-3}	N	3d	1u				29	138	-28.8	205.4	+25.8	-137.6	.568	*
			N)					1	–	4	-31.1	205.3	+25.8	-140.6	.589	
			N)					1	–	1	-27.0	204.5	+25.0	-135.9	.543	
	U	2_{1-21}	N	1b					19	–	-29.0	205.5	+25.9	-137.8	.570	
	U	2_{22}	N	1					6	–	-28.3	204.8	+25.3	-137.5	.558	
Jan 14		*1*	*22*	*6*	*2*			*7*	*75*	*370*	{-4.5}	{179.6}		{- 4.4}		*118 582*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	OF SPOTS y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
14.469	4		⧓-⧓	9	2	4		8	66	334	-28.7	210.9	+43.5	-125.5	.742	
D /1115/	*p*		*S*	*4*	*1*	*2*		*4*	*43*	*233*	*-28.8*	*213.3*	*+45.9*	*-124.3*	*.765*	
	f		*N*	*5*	*1*	*2*		*4*	*23*	*101*	*-28.7*	*205.3*	*+37.9*	*-128.1*	*.688*	
		1_{12}	S	2b	1p				36^{+}	185	-28.9	213.8	+46.4	-124.2	.770	+30+6
		5_2	S)					2	-	6	-27.7	212.2	+44.9	-123.4	.751	
		5_1	S	1		1			4	21	-28.7	212.0	+44.6	-124.8	.753	
		3	S	1		1		$1^{\times}$	3	20	-28.2	210.5	+43.1	-124.9	.737	$^{\times}{}_{11}$→6↑6
			S)					1	-	1	-27.0	209.9	+42.6	-123.5	.725	
		4	N	1		1			4	12	-27.6	208.6	+41.2	-124.9	.715	
			N)					1	-	2	-28.4	207.3	+39.9	-126.6	.706	
		6	N	1		1		$2^{\times}$	2	9	-29.5	206.9	+39.5	-128.3	.708	$^{\times}{}_{3}$ xsx
			N)					1	-	2	-30.1	204.7	+37.3	-130.2	.689	→16↑6
		2_{1-3}	N	3d	1n				17	76	-28.7	204.6	+37.2	-128.6	.681	
Jan 15		*1*	*19*	*9*	*2*	*4*		*8*	*66*	*334*	*{-4.6}*	*{167.4}*		*{- 4.9}*	*89*	*447*
15.259	4		◇-⧓	6	1	4	4	5	67	356	-28.8	211.3	+54.4	-121.7	.838	
K /0613/	*p*		*S*	*3*	*1*	*1*	*2*	*2*	*49*	*285*	*-28.8*	*212.9*	*+56.0*	*-121.3*	*.851*	
	f		*N*	*3*		*3*	*2*	*3*	*18*	*71*	*-28.7*	*205.0*	*+48.1*	*-123.4*	*.784*	
		1_{12}	S	2b	1p				41^{+}	234	-28.9	213.4	+56.5	-121.3	.855	+35+6
		5_1	S				1		1	12	-28.7	211.9	+55.0	-121.3	.843	
		5_2	S)				1		1	13	-28.1	211.8	+54.8	-120.6	.840	
			S)					1	-	3	-30.7	211.3	+54.3	-123.8	.843	
		3	S	1		1		$1^{\times}$	6	23	-28.5	209.4	+52.5	-121.8	.822	$^{\times}{}_{3}$→
		4	N	1		1		$1^{\times}$	2	9	-27.3	208.2	+51.2	-120.7	.808	$^{\times}{}_{2}$↑9
		6	N	1		1	$1^{\times}$		5	14	-29.3	206.5	+49.5	-123.6	.799	$^{\times}{}_{3}$
			N					2	-	3	-26.5	206.2	+49.2	-120.4	.787	↑8
			N)				1		1	6	-30.3	205.3	+48.3	-125.2	.792	
		2_{12}	N	1c		1q			10	39	-28.7	203.6	+46.7	-123.9	.771	
Jan 16		*1*	*18*	*6*	*1*	*4*	*4*	*5*	*67*	*356*	*{-4.7}*	*{156.9}*		*{- 5.2}*	*74*	*387*
16.258	4		◇ ⧓	3	1	1	2	5	63	340	-29.3	212.0	+68.2	-119.7	.932	
K /0612/	*p*		*S*	*2*	*1*		*2*	*3*	*50*	*294*	*-29.2*	*213.0*	*+69.2*	*-119.4*	*.939*	
	f		*N*	*1*		*1*		*2*	*13*	*46*	*-30.2*	*205.3*	*+61.5*	*-121.6*	*.893*	
		1_{12}	S	2b	1q				48	260	-29.2	213.3	+69.5	-119.4	.940	
			S					1	-	6	-29.8	211.8	+68.0	-120.2	.932	
		5_1	S				1		1	8	-28.7	211.7	+67.9	-119.0	.931	
		5_2	S					1	-	7	-28.1	211.7	+67.9	-118.4	.931	
			S)					1	-	3	-28.5	210.1	+66.4	-119.0	.922	
			S				1		1	10	-29.6	209.8	+66.0	-120.2	.921	
		6	N	1c		1u			13	44	-30.2	205.4	+61.6	-121.6	.894	
		2_{12}	N					2	-	2	-29.2	203.1	+59.3	-120.9	.877	↑8
	5↑		Δ ▽				2	2	2	19	+22.0	140.6	- 3.2	+6.4	.456	
	p↓1		*N*				*2*		*2*	*17*	*+22.0*	*140.9*	*- 2.9*	*+5.9*	*.455*	*↑7*
	f↓		*S*					*2*	-	*2*	*+21.9*	*138.5*	*- 5.3*	*+10.8*	*.460*	*→6*
Jan 17		*2*	*26*	*3*	*1*	*1*	*4*	*7*	*65*	*359*	*{-4.8}*	*{143.8}*		*{- 5.7}*	*51*	*277*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
17.571	4→	(◇ ꟾ)		2	1	1			-	290	-28.4	212.1	+85.6	-118.1	.994	
D /1343/		p•1 12	S	(1)	(1)				(-)	(275)	(-28.3	212.5	+86.0	-118.0	.995)	
		f•6	N	(1)		(1)			(-)	(15)	-29.9	204.3	+77.8	-119.5	.975	
	5↓	Δ ◇		1		1		2	2	14	+21.6	140.5	+14.0	-26.7	.501	
		p•1	N'	1		1		1×	2	11	+21.3	141.1	+14.6	-28.1	.501	×2←
		f•	S'					1	-	3	+22.9	138.1	+11.6	-21.7	.502	
Jan 18		*2*	*22*	*3*	*1*	*2*		*2*	*2*	*304*	{-4.9}	{126.5}		{- 6.3}	*4*	*86*
18.476									N O	S U N S P O T S	A T A L L					
D /1125/																
Jan 19																
19.257									N O	S U N S P O T S	A T A L L					
K /0610/																
Jan 20																
20.283	6→	p•1	◇ N'	1		1			8	37	+29.9	20.0	-70.8	+57.5	.972	*
K /0648/																
Jan 21		*1*	*10*	*1*		*1*			*8*	*37*	{-5.2}	{ 90.8}		{- 7.6}	*4*	*17*
21.496	6	p•1	◇ N	1		1			8	30	+30.0	19.3	-55.5	+52.8	.899	
K /1154/	7↑	Δ ◇		1		1		6	7	31	+25.0	86.4	+11.6	-19.9	.537	
		p	N	1		1		2	7	16	+24.8	87.3	+12.5	-21.4	.538	
		f	S					4	-	15	+25.3	85.5	+10.7	-18.3	.536	
		1	N	1		1			7	13	+24.9	87.3	+12.5	-21.4	.540	
		3	N					2	-	3	+24.2	87.1	+12.3	-21.6	.530	
		2	S'					2	-	11	+25.4	85.8	+11.0	-18.7	.539	↑5
		4	S'					2	-	4	+25.0	84.7	+ 9.9	-17.2	.529	→6
	8→	p•1	◇ N	1c		1u			11	45	+25.5	6.7	-68.1	+61.3	.957	
Jan 22		*3*	*32*	*3*		*3*		*6*	*26*	*106*	{-5.3}	{ 74.8}		{- 8.1}	*24*	*106*
22.522	6	p	◇ N	1		1		1	6	13	+29.9	18.4	-42.9	+46.8	.813	
D /1232/		1	N	1		1			6	12	+29.8	18.5	-42.8	+46.8	.812	
			(N)					1	-	1	+30.9	17.5	-43.9	+46.2	.826	
	7	◇ꟾ꟱	δ	6	1	5		1	51	216	+24.8	85.7	+24.4	-37.2	.624	
		p	N	*3*	*1*	*2*		*1*	*27*	*117*	*+25.0*	*86.7*	*+25.4*	*-38.1*	*.634*	
		f	S	*3*		*3*			*24*	*99*	*+24.5*	*84.6*	*+23.3*	*-36.3*	*.612*	
		1	N	1b	1a				23	(100	+25.0	86.8	+25.5	-38.2	.635	
		3	N'	1		1			2	(5	+24.5	86.3	+25.0	-38.2	.625	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		5	N	1		1			2	(10	+25.1	85.8	+24.5	-37.0	.627	
			(N)					1	-	2	+26.3	85.8	+24.5	-35.6	.640	
		2	S	1		1			7	28	+25.1	85.1	+23.8	-36.1	.622	
		6	S'	1		1			4+	(36	+24.3	84.7	+23.4	-36.6	.610	+2+
		4	S	1		1			13	35	+24.2	84.2	+22.9	-36.1	.605	
	8	*p*•1	◇	*N* 1		1	1	×	4	21	+25.3	5.9	-55.4	+57.5	.884	×₇+9
	9		Δ	▽			1	4	1	13	-27.6	42.1	-19.2	+142.8	.483	
		p•1		*S*			1×	2	*1*	*9*	*-27.6*	*42.8*	*-18.5*	*+143.7*	*.476*	xyx ↑7×₄
		f		*N*				2	-	*4*	*-27.7*	*40.7*	*-20.8*	*+140.9*	*.499*	
				N)				1	-	1	-28.6	41.1	-20.3	+142.7	.503	
				N)				1	-	3	-27.4	40.5	-20.9	+140.3	.497	
Jan 23		*4*	*48*	*8*	*1*	*7*	*2*	*6*	*62*	*263*	*{-5.4}*	*{ 61.3}*		*{- 8.6}*	*92*	*396*
23.461 D /1104/	6	*p*	◇	*N* 1		1		1	4	10	+30.1	18.2	-30.7	+37.8	.724	
		1	N	1		1			4	9	+29.9	18.3	-30.6	+37.9	.721	
			(N)					1	-	1	+31.8	17.1	-31.9	+37.1	.746	
	7		◇		4	1	3	2		51	214	+24.7	85.5	+36.5	-48.1	.728
		p		*N*	*3*	*1*	*2*			*38*	*155*	*+24.9*	*86.0*	*+37.1*	*-48.2*	*.735*
		f		*S*	*1*		*1*	*2*		*13*	*59*	*+24.1*	*84.0*	*+35.1*	*-47.8*	*.711*
		1	N		1	1				20	(80	+25.0	86.5	+37.5	-48.5	.740
		3	N		1b		1			10	(35	+24.7	85.8	+36.8	-48.3	.731
		5	N		1		1			8	(40	+24.9	85.2	+36.3	-47.7	.728
		6	S					2		2	16	+24.2	84.6	+35.6	-48.0	.718
		4	S		1		1			11	43	+24.0	83.8	+34.9	-47.7	.709
	8	*p*•1	Δ	*N*				2	-	7	+25.3	5.7	-43.2	+51.7	.792	
	9		Δ	Δ				5	-	10	-28.0	40.2	- 8.7	+160.8	.409	
		p•1		*S*				1	-	*2*	*-27.5*	*41.6*	*- 7.4*	*+163.1*	*.395*	
		f		*N*				4	-	*8*	*-28.1*	*39.9*	*- 9.0*	*+160.3*	*.412*	
				N)				2	-	3	-27.8	39.9	- 9.1	+159.9	.408	
				N)				2	-	5	-28.3	39.9	- 9.0	+160 5	.415	
Jan 24		*4*	*47*	*5*	*1*	*4*	*2*	*8*	*55*	*241*	*{-5.5}*	*{ 49.0}*		*{- 9.0}*	*74*	*336*
24.411 D /0952/	6	*p*•1	◇	*N* 1		1			2	4	+29.9	17.9	-18.6	25.6	.641	
	7		◇	◇	4		4	1		32	113	+24.5	85.2	+48.7	-55.5	.833
		p		*N*	*3*		*3*			*24*	*83*	*+24.8*	*85.6*	*+49.1*	*-55.4*	*.837*
		f		*S*	*1*		*1*	*1*		*8*	*30*	*+23.9*	*84.0*	*+47.6*	*-55.6*	*.820*
		1	N		1b		1			12	(40	+24.7	86.0	+49.5	-55.7	.840
		3	N		1		1			9	(30	+25.0	85.4	+48.9	-55.0	.836
		5	N		1		1			3	(13	+24.5	85.0	+48.6	-55.4	.832
		6	S					1		1	4	+24.0	84.6	+48.1	-55.7	.825
		4	S		1		1			8	26	+23.8	83.9	+47.5	-55.6	.819
	8	↓*p*•1	Δ	*N'*				1	-	1	+25.0	5.3	-31.2	+43.5	.685	
Jan 25		*3*	*33*	*5*		*5*	*1*	*1*	*34*	*118*	*{-5.5}*	*{ 36.4}*		*{- 9.4}*	*39*	*132*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
25.363	6↓p•1	Δ	N					1	-	5	+29.9	17.4	- 6.6	+9.7	.591	
K /0843/	7	◇⇼◇		2		2	2		10	69	+24.3	84.3	+60.4	-60.2	.916	
	p		*N*	*1*		*1*	*1*		*7*	*35*	*+24.9*	*85.0*	*+61.1*	*-59.8*	*.920*	
	f♦4		*S*	*1*		*1*	*1*×		*3*	*34*	*+23.8*	*83.7*	*+59.8*	*-60.6*	*.911*	×6
	(1)	N'					1		1	5	+24.1	85.3	+61.4	-60.7	.920	
	3	N		1		1			6	30	+25.0	84.9	+61.0	-59.7	.920	
Jan 26	*2*	*21*		*2*		*2*	*2*	*1*	*10*	*74*	*{-5.6}*	*{ 23.9}*		*{- 9.8}*	*7*	*62*
26.354	7→f•4	Δ	S					1	-	(9)	(+23.1	82.7	+71.9	-64.4	.969)	
K /0830/	10↑p•1	Δ	S					1	-	(3)	(-18.1	51.4	+40.5	-111.0	.662)	*
Jan 27	*2*	*20*						*2*	*-*	*12*	*{-5.7}*	*{ 10.9}*		*{-10.2}*	*0*	*9*
ROT No *1651*																
27.358	10	◇-◇		5		5		6	19	98	-19.6	51.1	+53.5	-110.1	.809	
D /0835/	*p*		*S*	*3*		*3*		*3*	*8*	*47*	*-18.7*	*52.3*	*+54.6*	*-108.8*	*.818*	
	f		*N*	*2*		*2*		*3*	*11*	*51*	*-20.5*	*50.1*	*+52.5*	*-111.3*	*.800*	
	1_1	S		1		1a			3	18	-18.4	52.7	+55.1	-108.5	.822	
	1_2	S		1		1a			2	12	-19.0	52.7	+55.1	-109.2	.823	
	1_3	S						1	-	4	-19.9	52.2	+54.5	-110.3	.819	
		S		1		1		2×	3	13	-18.3	51.3	+53.6	-108.5	.808	×6
	4_1	N		1		1			3	7	-19.6	50.6	+52.9	-110.2	.803	
	2	N		1		1			8	32	-21.0	50.2	+52.6	-111.9	.802	
	4_2	N						2	-	9	-19.3	49.6	+51.9	-110.0	.793	→5
		N						1	-	3	-20.2	49.2	+51.6	-111.2	.791	
Jan 28	*1*	*12*		*5*		*5*		*6*	*19*	*98*	*{-5.8}*	*{357.7}*		*{-10.7}*	*22*	*113*
28.434	10	◇ ◇		2		2		4	18	66	-19.6	52.1	+68.6	-108.8	.928	
D /1025/	*p*		*S*	*1*		*1*		*1*	*10*	*39*	*-18.7*	*53.8*	*+70.3*	*-107.8*	*.939*	
	f		*N*	*1*		*1*		*3*	*8*	*27*	*-20.9*	*49.6*	*+66.1*	*-110.2*	*.912*	
	1_{12}	S		1		1			10	37	-18.7	54.0	+70.5	-107.8	.940	
	3	S'						1	-	2	-18.3	50.1	+66.6	-107.4	.915	
	2	N		1		1			8	18	-21.5	50.0	+66.5	-110.9	.915	
	4_1	N						1	-	3	-19.6	49.4	+66.0	-108.8	.911	
	4_2	N						2	-	6	-19.6	48.5	+65.0	-108.8	.905	
Jan 29	*1*	*11*		*2*		*2*		*4*	*18*	*66*	*{-5.9}*	*{343.5}*		*{-11.1}*	*14*	*50*
29.368	10→p♦3	Δ	S'					2	-	7	-18.7	(52.1	+80.9)	-108.0	.984	
D /0849/	11→p•1	Δ	N'					1	-	2	+25.4	258.2	-73.0	+62.3	.977	
Jan 30	*2*	*20*						*3*	*-*	*9*	*{-5.9}*	*{331.2}*		*{-11.5}*	*0*	*3*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
30.345	11		◇–◇	3		2	1	1	16	58	+25.8	257.5	-60.8	+58.7	.922	
D /0817/		*p*	*N*	*1*		*1*	*1*		*12*	*41*	*+25.4*	*258.3*	*-60.0*	*+58.9*	*.916*	
		f	*S*	*2*		*1*		*1*	*4*	*17*	*+26.8*	*255.6*	*-62.8*	*+58.3*	*.934*	
		1	N				1		1	8	+26.0	259.1	-59.2	+57.9	.913	
		3	N	1		1			11	33	+25.2	258.1	-60.2	+59.1	.917	
			S'					1	-	2	+27.2	258.0	-60.3	+57.0	.922	
		2	S	2		1			4	15	+26.7	255.3	-63.1	+58.5	.936	
Jan 31		*1*	*11*	*3*		*2*	*1*	*1*	*16*	*58*	*{-6.0}*	*{318.3}*		*{-11.9}*	*12*	*45*
31.099	11		◇–◇	3		3		1	19	75	+26.2	257.9	-50.5	+54.1	.855	
I /0222/		*p*	*N*	*2*		*2*			*13*	*43*	*+25.7*	*259.9*	*-48.5*	*+53.8*	*.838*	
		f	*S*	*1*		*1*		*1*	*6*	*32*	*+27.0*	*255.2*	*-53.2*	*+54.6*	*.877*	
		1	N	1		1			7	22	+26.0	261.2	-47.2	+52.8	.830	
		3	N	1		1			6	21	+25.3	258.6	-49.8	+54.8	.847	
			S					1	-	2	+26.7	257.4	-51.0	+53.9	.861	
		2	S	1		1			6	30	+27.0	255.1	-53.3	+54.6	.878	
Feb 1		*1*	*12*	*3*		*3*		*1*	*19*	*75*	*{-6.1}*	*{308.4}*		*{-12.2}*	*20*	*77*
32.265	11		◇–◇	8		8	2	5	31	166	+26.1	256.9	-36.1	+45.8	.741	*
K /0621/		*p*	*N*	*5*		*5*	*2*	*4*	*22*	*87*	*+25.7*	*259.0*	*-34.0*	*+44.7*	*.720*	
		f	*S*	*3*		*3*		*1*	*9*	*79*	*+26.5*	*254.5*	*-38.5*	*+47.1*	*.764*	
		1	N				2		2	7	+25.4	262.2	-30.9	+42.3	.691	
		1_1	N	1		1			2	5	+25.0	261.6	-31.4	+43.2	.692	
		5	N	1		1		1×	4	14	+25.1	260.7	-32.3	+43.9	.702	×3→
		3	N	1		1			5	15	+25.4	259.0	-34.0	+45.0	.718	
		7	N	2		2			9+	35	+25.9	258.0	-35.0	+45.3	.730	+6+3 →7
			N					1	-	2	+25.0	257.9	-35.1	+46.3	.724	
			N					2	-	9	+26.8	257.0	-36.1	+45.0	.746	
		8	S'					1	-	1	+24.7	256.7	-36.3	+47.5	.733	
		6	S	1		1			2	23	+25.9	255.2	-37.8	+47.2	.754	
		2	S	1		1			5	21	+27.2	254.3	-38.8	+46.5	.770	
		4	S	1		1			2	34	+26.5	254.1	-38.9	+47.4	.767	
Feb 2		*1*	*14*	*8*		*8*	*2*	*5*	*31*	*166*	*{-6.1}*	*{293.0}*		*{-12.7}*	*42*	*221*
33.236	11		◇–◇	6		5	3	4	29	154	+26.3	256.7	-23.5	+34.0	.641	
K /0540/		*p*	*N*	*2*		*2*	*3*	*3*	*11*	*63*	*+25.5*	*260.2*	*-20.0*	*+30.7*	*.608*	
		f	*S*	*4*		*3*		*1*	*18*	*91*	*+26.8*	*254.3*	*-26.0*	*+36.2*	*.664*	
		1	N					1	-	5	+26.2	262.8	-17.5	+26.9	.598	
		1_1	N				1		1	6	+25.6	262.1	-18.2	+28.4	.595	
		5	N	1		1			5	23	+25.3	260.8	-19.4	+30.2	.600	
		3	N	1		1			3	17	+25.2	259.7	-20.6	+31.7	.608	
			N					1	-	2	+25.1	257.7	-22.5	+34.1	.620	
		7	N				2	1×	2	10	+26.4	257.7	-22.5	+32.9	.634	→7↑8 ×2
		8	S'					1	-	2	+25.2	255.6	-24.6	+36.4	.638	
		6	S	1		1			5	17	+26.5	255.4	-24.8	+35.3	.653	
		4	S	2		1			10	54	+26.6	254.1	-26.2	+36.6	.664	
		2	S	1		1			3	18	+27.8	253.8	-26.5	+35.8	.678	
Feb 3		*1*	*15*	*6*		*5*	*3*	*4*	*29*	*154*	*{-6.2}*	*{280.3}*		*{-13.1}*	*45*	*239*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	OF m	SPOTS s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
34.447	11		◇-◇	5		4	2	9	19	68	+26.0	255.9	- 8.4	+13.6	.552	
D /1044/		*p*	*N*	*2*		*2*	*1*	*4*	*7*	*26*	*+25.5*	*259.7*	*- 4.6*	*+ 7.7*	*.534*	
		f	*S*	*3*		*2*	*1*	*5*	*12*	*42*	*+26.2*	*253.6*	*-10.7*	*+17.3*	*.564*	
		5	N	1		1			3	8	+25.8	261.6	- 2.7	+ 4.5	.535	
			N)					1	-	1	+25.0	261.3	- 3.0	+ 5.2	.523	
		3	N					2	-	3	+25.1	260.5	- 3.8	+ 6.6	.526	
		7	N	1		1	1+	1×	4	14	+25.5	258.4	- 5.9	+10.0	.536	+4→6×2←5
		8	S'					1	-	2	+25.3	255.2	- 9.1	+15.4	.544	
			S)					1	-	4	+26.9	254.5	- 9.8	+15.6	.568	
		6	S	1		1		1	5	14	+25.8	254.3	-10.0	+16.5	.555	
		4	S	2		1			6	15	+26.2	253.4	-10.9	+17.6	.564	
		2	S				1	1×	1	5	+27.0	253.5	-10.8	+17.0	.574	×2
			(S)					1	-	2	+27.0	246.9	-17.4	+26.1	.608	
Feb 4		*1*	*12*	*5*		*4*	*2*	*9*	*19*	*68*	*{-6.3}*	*{264.3}*		*{-13.6}*	*30*	*111*
35.448	11		▽-◇	1		1	3	8	5	35	+25.7	257.8	+ 6.7	-11.0	.545	
D /1046/		*p*	*N*	*1*		*1*	*1*	*5*	*3*	*21*	*+25.5*	*260.4*	*+ 9.3*	*-15.4*	*.550*	
		f	*S*				*2*	*3*	*2*	*14*	*+25.9*	*253.8*	*+ 2.7*	*- 4.5*	*.537*	
			N)					1	-	3	+24.2	262.2	+11.1	-19.0	.538	
		5	N	1		1		1×	2	7	+26.3	261.5	+10.4	-16.8	.564	×↓
		3	N					1	-	4	+25.5	260.9	+ 9.8	-16.2	.551	
		7	N				1	2×	1	7	+25.4	258.3	+ 7.2	-12.1	.540	→10↑6 ×4
		8	S'					1	-	3	+25.2	255.0	+ 3.9	- 6.7	.528	
		6	S				1	1	1	5	+26.0	253.8	+ 2.7	- 4.5	.538	
		4	S				1		1	4	+26.1	253.3	+ 2.2	- 3.6	.539	
		2	S					1	-	2	+26.2	252.8	+ 1.7	- 2.8	.541	
	12	*p*•1o	◇	*S'*	1		1		2	13	-39.7	170.0	-81.2	+129.3	.983	*
Feb 5		*2*	*21*		*2*	*2*	*3*	*8*	*7*	*48*	*{-6.3}*	*{251.1}*		*{-13.9}*	*11*	*64*
36.506	11		▽ △				2	3	2	11	+25.9	252.3	+15.1	-23.6	.584	
D /1208/		*p*•7	*N'*					*1*	-	*1*	*+25.3*	*258.0*	*+20.8*	*-31.7*	*.613*	
		f	*S*				*2*	*2*	*2*	*10*	*+26.0*	*251.8*	*+14.6*	*-22.8*	*.581*	
		8o	S)					1	-	2	+26.5	254.9	+17.7	-26.8	.605	
		4	S				1		1	3	+26.3	253.2	+16.0	-24.7	.593	
		2	S'					1	-	2	+25.7	252.5	+15.3	-24.2	.582	
			S				1		1	3	+25.4	247.7	+10.5	-17.4	.552	
	12	*p*•1o	△	*S'*				1	-	4	-38.8	170.4	-66.8	+129.4	.928	
Feb 6		*2*	*20*				*2*	*4*	*2*	*15*	*{-6.4}*	*{237.2}*		*{-14.4}*	*4*	*22*
37.130	11↓	*f*•8o	△	*S*				1	-	2	+27.0	254.4	+25.4	-35.3	.665	
I /0307/	/12/															INTERMITTENT
Feb 7		*1*	*10*					*1*	-	*2*	*{-6.5}*	*{229.0}*		*{-14.6}*	*0*	*3*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF SPOTS s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
38.396	12		◇–◇	5		4	3	7	22	96	-40.3	168.2	-44.1	+137.6	.789	
D /0930/	*p*		*S*	*3*		*3*	*1*	*5*	*11*	*56*	*-40.3*	*170.1*	*-42.2*	*+138.5*	*.776*	
	f		*N*	*2*		*1*	*2*	*2*	*11*	*40*	*-40.3*	*165.6*	*-46.8*	*+136.5*	*.808*	
	1_1	S		1		1			6	21	-40.8	170.8	-41.5	+139.4	.773	train
	1_2	S		1		1			2	5	-41.6	170.7	-41.6	+140.1	.778	
	1_3	S		1		1		1×	2	15	-39.9	170.3	-42.1	+138.0	.772	×6←
	1_4	S					1		1	10	-39.4	169.3	-43.0	+137.0	.776	
		S)						1	–	1	-42.1	169.1	-43.2	+140.0	.792	
	1_5	S						1	–	2	-39.5	167.8	-44.5	+136.5	.788	
	3_1	S'						2	–	2	-40.1	166.4	-45.9	+136.6	.801	
	1_7	N'						1	–	2	-42.6	166.4	-45.9	+139.3	.813	
	2_1	N		2		1			9	20	-39.3	166.4	-45.9	+135.7	.797	
	6_1	N'						1	–	7	-40.9	164.8	-47.6	+136.7	.816	
	2_2	N					1		1	6	-40.1	164.5	-47.9	+135.7	.815	
	4_1	N'					1		1	5	-43.1	164.2	-48.1	+138.9	.829	
	13↑		Δ Δ					2	–	5	+17.7	230.7	+18.4	-36.5	.507	
	p•		*N*					*1*	–	*3*	*+17.8*	*231.3*	*+19.0*	*-37.3*	*.513*	
	f•		*S)*					*1*	–	*2*	*+17.6*	*229.8*	*+17.5*	*-35.3*	*.497*	
Feb 8	*2*	*23*		*5*		*4*	*3*	*9*	*22*	*101*	*{-6.5}*	*{212.3}*		*{-15.1}*	*27*	*127*
39.403	12		¤≠¤	13	2	5		11	60	283	-40.6	167.0	-32.1	+144.9	.703	
D /0941/	*p*		*S*	*5*	*1*	*1*		*7*	*26*	*142*	*-40.5*	*170.4*	*-28.6*	*+147.3*	*.677*	
	f		*N*	*8*	*1*	*4*		*4*	*34*	*141*	*-40.7*	*163.5*	*-35.5*	*+142.6*	*.728*	
	1_{1-4}	S		4t	1q				23	119	-40.5	170.9	-28.1	+147.7	.674	
		S)						1	–	2	-38.1	169.0	-30.0	+143.6	.667	
	1_5	S		1		1			3	8	-39.3	168.4	-30.7	+144.5	.682	
	1_7	S						2	–	7	-41.6	168.1	-31.0	+146.7	.705	
	5_1	S'						2	–	2	-39.4	166.6	-32.5	+143.4	.696	
		N						2	–	7	-42.5	166.3	-32.7	+146.4	.722	↑5
	3_2	S'						1	–	2	-41.2	166.2	-32.9	+145.0	.713	
	3_1	S'						1	–	2	-41.1	165.7	-33.3	+144.6	.716	
	6_1	N		1		1			2	6	-41.2	164.6	-34.5	+143.9	.725	
	2_1	N		4t	1n				19	80	-39.8	164.1	-35.0	+142.0	.718	
	2_2	N		1		1		1×	4	22	-40.8	163.2	-35.9	+142.5	.732	×2↓
	4_1	N		1		1			3	8	-43.1	162.2	-36.9	+144.4	.755	
	4_2	N		1		1		1×	6	18	-42.3	160.7	-38.3	+142.7	.759	×3→
	U 1_1	*S*		*1*					*6*	–	*-40.6*	*171.3*	*-27.7*	*+148.1*	*.672*	
	U 1_2	*S*		*1*					*3*	–	*-40.9*	*171.3*	*-27.7*	*+148.5*	*.676*	
	U 1_3	*S*		*1b*					*12*	–	*-40.3*	*170.8*	*-28.3*	*+147.5*	*.674*	
	U 1_4	*S*		*1*					*2*	–	*-40.2*	*170.0*	*-29.0*	*+146.8*	*.678*	
	U 2_{11}	*N*		*2*					*12*	–	*-39.7*	*164.5*	*-34.5*	*+142.3*	*.714*	
	U 2_{12}	*N*		*2*					*7+*	–	*-39.8*	*163.3*	*-35.8*	*+141.5*	*.724*	+5+2
	13↓ *p•*		▽ *N*				1		1	3	+17.5	232.5	+33.5	-53.4	.657	
Feb 9	*2*	*28*		*13*	*2*	*5*	*1*	*11*	*61*	*286*	*{-6.6}*	*{199.0}*		*{-15.4}*	*88*	*388*
40.362	12		¤≠¤	14	2	10	3	16	69	327	-40.6	166.5	-19.9	+155.5	.624	
D /0841/	*p*		*S*	*7*	*1*	*6*	*1*	*8*	*37*	*192*	*-40.5*	*169.2*	*-17.2*	*+158.3*	*.607*	
	f		*N*	*7*	*1*	*4*	*2*	*8*	*32*	*135*	*-40.7*	*162.5*	*-23.9*	*+151.6*	*.648*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B	L	L_{CM}	ϑ°	r/R	EXTRA DATA
		continued														
		1_{1-4}	S	1c	1p				22	110	-40.6	171.3	-15.1	+160.6	.597	
		1_6	S	1		1			2	14	-40.2	170.0	-16.4	+158.8	.599	
		1_5	S	1		1		$1^{\times}$	2	13	-39.7	169.2	-17.2	+157.5	.598	$^{\times}{}_{3}\downarrow$
		1_7	S'					1	-	1	-41.5	168.5	-17.9	+158.1	.622	
		5_2	S'					2	-	2	-39.9	167.7	-18.7	+156.0	.608	→8
		5_1	S	1		1			2	6	-39.7	166.2	-20.2	+154.3	.614	
			S					2	-	2	-40.3	166.2	-20.2	+154.9	.622	→6
			N'					2	-	3	-42.9	165.6	-20.9	+156.4	.654	→11↑6
			(S)					1	-	2	-39.2	165.2	-21.2	+152.8	.615	
		3_2	S'				1		1	3	-41.6	165.1	-21.4	+154.8	.643	
		3_1	S	1		1		$1^{\times}$	2	27	-41.2	164.6	-21.8	+154.1	.640	$^{\times}{}_{2}\leftarrow$
		6_1	N	1		1			2	4	-40.8	164.3	-22.2	+153.3	.638	
		6_2	N'				1		1	16	-40.4	164.3	-22.2	+152.9	.634	
		7	S'	2		2			6	12	-39.5	164.0	-22.5	+151.8	.626	→7↑5
		2_1	N	3^{+}	1u				22	79	-39.9	162.7	-23.7	+150.9	.639	$^{+}$→9
		4_3	N				1	$2^{\times}$	1	8	-43.2	162.4	-24.0	+153.8	.675	xyx→12$^{\times}{}_{3}$
		2_2	N	1		1		$1^{\times}$	2	8	-41.5	161.9	-24.5	+151.8	.660	$^{\times}$→
		4_1	N'	1		1			2	5	-43.7	160.6	-25.8	+152.8	.690	
		2_3	N					3	-	6	-41.6	160.5	-25.9	+150.7	.670	→8↑6
		4_2	N	1		1			2	6	-42.7	157.8	-28.6	+149.6	.697	
Feb 10		*1*	*20*	*14*	*2*	*10*	*3*	*16*	*69*	*327*	*{-6.6}*	*{186.4}*		*{-15.8}*	*109*	*510*
41.454	12		◇≠II	δ	12	1	8	4	12	74	342	-41.1	165.0	- 7.1	+170.9	.579	
D /1054/	*p*			*S*	*6*	*1*	*3*	*4*	*9*	*44*	*216*	*-40.6*	*167.9*	*- 4.2*	*+174.4*	*.566*	
	f			*N*	*6*		*5*		*3*	*30*	*126*	*-41.9*	*160.1*	*-11.9*	*+165.1*	*.600*	
		1_{1-6}	S		3e	1p			$2^{\times}$	28^{+}	126	-40.6	170.6	- 1.5	+178.0	.561	$^{\times}{}_{6}\leftarrow$
		1_7	S		1		1			2	9	-41.6	169.3	- 2.7	+176.4	.576	+22+4+2
			S)						1	-	4	-41.9	167.1	- 4.9	+173.7	.582	
		5_2	S						1	-	4	-40.0	166.8	- 5.2	+172.8	.556	
		5_1	S					1		1	15	-39.9	165.9	- 6.1	+171.5	.556	
		3_2	S		1		1		$1^{\times}$	6	7	-41.3	164.4	- 7.6	+170.1	.580	$^{\times}\leftarrow$
		3_1	S					2		2	19	-41.3	163.0	- 9.1	+168.2	.583	→8
		6_1	N		1		1			2	6	-40.8	162.9	- 9.1	+168.0	.577	
		6_2	N						1	-	5	-40.4	162.5	- 9.6	+167.2	.572	
		7	S'		1		1	1^{+}	$4^{\times}$	5	(32	-40.2	161.5	-10.6	+165.8	.572	$^{\times}{}_{8}\leftarrow$15↓11
		2_2	N		1		1			6	17	-41.6	160.5	-11.5	+165.4	.595	$^{+}{}_{4}\rightarrow$9
		2_1	N		2		1			6	(33	-40.3	160.4	-11.6	+164.5	.578	
		4_{31}	N		1		1			4	31	-43.6	160.2	-11.8	+166.2	.623	
		2_3	N		1		1			12	29	-42.2	159.1	-13.0	+164.1	.608	
			N)						1	-	2	-43.6	157.8	-14.3	+163.5	.632	
		4_2	N						1	-	5	-42.6	157.4	-14.6	+162.5	.620	
Feb 11		*1*	*21*	*12*	*1*	*8*	*4*	*12*		*74*	*342*	*{-6.7}*	*{172.0}*		*{-16.2}*	*121*	*558*
42.424	12		◇≠II	δ	14	1	8	2	3	67	419	-41.5	162.6	+ 3.3	-175 6	.578	
K /1011/	*p*			*S*	*7*	*1*	*3*	*1*	*2*	*34*	*227*	*-40.9*	*166.5*	*+ 7.2*	*-170.5*	*.575*	
	f			*N*	*7*		*5*	*1*	*1*	*33*	*192*	*-42.2*	*158.0*	*- 1.3*	*+178.4*	*.583*	
		1_{1-7}	S		3t	1p				22^{+}	148	-41.0	169.4	+10.1	-166.7	.582	$^{+}$18+2+2
		5_2	S						1	-	2	-40.3	166.0	+ 6.7	-170.9	.562	
		5_1	S					1		1	10	-40.1	164.8	+ 5.6	-172.3	.558	
		3_2	S		1		1			2	13	-41.1	163.4	+ 4.1	-174.5	.569	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		3_1	S	1		1			2	16	-41.0	162.3	+ 3.1	-175.9	.567	
		6_1	N	1		1			5	17	-41.7	160.7	+ 1.5	-178.1	.576	
		6_2	N				1		1	8	-41.0	160.1	+ 0.9	-178.8	.565	
		2_1	N	1		1			4	27	-41.3	158.7	- 0.6	+179.2	.570	
		8_1	N	1		1			7	(34	-42.4	158.6	- 0.7	+179.2	.586	
		7	S	2		1		1×	7	38	-40.4	158.5	- 0.7	+179.0	.557	×↑
		4_{31}	N	1		1			2	(13	-43.4	158.1	- 1.1	+178.6	.600	
		2_{23}	N	3		1			14+	(88	-42.3	156.9	- 2.4	+177.0	.585	+8+3+3
		4_2	N'					1	-	5	-42.7	155.2	- 4.0	+175.0	.592	
	14 ↑	◇ ▽		1		1	1		3	18	+15.6	196.3	+37.1	-58.4	.684	
	p•1		*N*				*1*		*1*	*7*	*+15.0*	*197.1*	*+37.9*	*-59.7*	*.689*	
	f•2		*S*	*1*		*1*			*2*	*11*	*+15.9*	*195.8*	*+36.6*	*-57.6*	*.680*	
	15 ↑	◇-◇		5		5	2	3	32	99	+ 2.8	139.2	-20.0	+65.0	.379	*Old C* *
	p		*S*	*2*		*2*	*2*	*1*	*22*	*57*	*+ 3.4*	*140.6*	*-18.7*	*+62.1*	*.363*	
	f		*N*	*3*		*3*		*2*	*10*	*42*	*+ 2.0*	*137.4*	*-21.9*	*+68.8*	*.400*	
		1_1	S	1		1			18	29	+ 3.5	141.2	-18.0	+61.0	.355	
		1_2	S	1		1	1×		3	18	+ 3.5	140.5	-18.8	+62.0	.365	$×_6$↓5
		3	S				1	1×	1	10	+ 2.9	138.9	-20.4	+65.4	.384	$×_4$
		4	N	1		1			3	10	+ 2.4	138.8	-20.5	+66.6	.382	
		2_3	N					1	-	3	+ 2.6	137.4	-21.8	+67.6	.403	
		2_1	N	1		1			5	20	+ 1.7	137.1	-22.2	+69.9	.404	
		2_2	N	1		1		1×	2	9	+ 2.1	136.7	-22.6	+69.4	.411	$×_2$↑5
Feb 12		*3*	*48*	*20*	*1*	*14*	*5*	*6*	*102*	*536*	*{-6.7}*	*{159.3}*		*{-16.5}*	*173*	*893*
43.299	12	◇≠Ⅱ		6	1	4	4	9	47	362	-41.4	162.2	+14.5	-162.1	.608	
K /0711/	*p*		*S*	*2*	*1*	*1*	*4*	*3*	*31*	*209*	*-40.8*	*166.2*	*+18.5*	*-157.2*	*.617*	
	f		*N*	*4*		*3*		*6*	*16*	*153*	*-42.2*	*156.7*	*+ 8.9*	*-168.7*	*.595*	
		1_{1-7}	S	1c	1q		1×		25	142	-40.9	168.7	+21.0	-154.5	.631	$×_6$←
		5_1	S				1		1	7	-40.3	165.2	+17.5	-157.6	.604	
		3_2	S	1		1		1×	3	23	-40.4	162.9	+15.2	-160.3	.595	$×_{12}$↓5
		3_1	S				1		1	11	-40.7	162.1	+14.4	-161.5	.594	
			(S)					1	-	2	-41.3	161.1	+13.4	-163.0	.597	
			N					1	-	4	-40.3	160.1	+12.4	-163.6	.580	
		6_1	N					1	-	3	-42.0	160.1	+12.3	-164.7	.602	
		6_2	N					1	-	3	-41.1	159.3	+11.5	-165.1	.587	
		8_1	N	1		1			4	31	-41.6	158.1	+10.3	-166.9	.591	
		7	S				1		1	22	-40.5	157.3	+ 9.6	-167.2	.573	
		2_1	N'					1	-	4	-41.0	157.2	+ 9.5	-167.6	.580	
		8_2	N	1		1			2	34	-42.0	157.2	+ 9.5	-168.0	.594	
			S					1	-	2	-39.8	156.7	+ 8.9	-167.7	.561	
		2_{23}	N	2		1			10	61	-42.5	155.6	+ 7.8	-170.2	.596	
		4_{31}	N					1	-	10	-43.7	154.7	+ 7.0	-171.7	.610	
		4_2	N'					1	-	3	-43.3	153.6	+ 5.9	-172.9	.602	
	14	▽ △					1	1	1	12	+15.5	196.7	+49.0	-64.9	.804	
	p•1		*N*					*1*	-	*6*	*+15.2*	*197.4*	*+49.7*	*-65.5*	*.810*	
	f•2		*S*				*1*		*1*	*6*	*+15.8*	*195.9*	*+48.2*	*-64.3*	*.798*	
	15	◇-Ⅱ		2	1	1	3	5	32	198	+ 2.9	139.8	- 7.9	+38.7	.221	
	p		*S*	*1*	*1*		*2*	*2*	*22*	*116*	*+ 3.6*	*142.0*	*- 5.7*	*+28.9*	*.207*	
	f		*N*	*1*		*1*	*1*	*3*	*10*	*82*	*+ 1.8*	*136.8*	*-11.0*	*+52.7*	*.241*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_{12}	S	1c	1q			1×	20	98	+ 3.7	142.3	- 5.4	+27.4	.205	×5←
		1_3	S				1	1×	1	10	+ 3.5	141.0	- 6.7	+33.6	.213	×2←6
		3	S				1		1	8	+ 3.1	139.2	- 8.5	+41.1	.227	
		4	N'					1	-	4	+ 2.6	139.0	- 8.8	+43.5	.223	
		2_3	N					1	-	2	+ 2.5	137.7	-10.1	+47.6	.238	
		2_2	N				1	1×	1	16	+ 2.4	136.7	-11.0	+50.7	.248	×5
		2_1	N	1		1			9	60	+ 1.5	136.6	-11.2	+54.0	.241	
	16↑		Δ Δ					2	-	6	+21.3	161.5	+13.7	-25.4	.518	
		p•	*N*					*1*	-	*3*	*+20.5*	*162.0*	*+14.2*	*-26.9*	*.511*	
		f•	*S*					*1*	-	*3*	*+22.0*	*160.9*	*+13.2*	*-23.9*	*.525*	
	17↑		◇–◇	2		2		4	10	42	+23.7	139.9	- 7.8	+13.7	.523	
		p	*N*	*1*		*1*		*2*	*6*	*20*	*+23.1*	*141.5*	*- 6.3*	*+11.4*	*.509*	
		f	*S*	*1*		*1*		*2*	*4*	*22*	*+24.3*	*138.6*	*- 9.1*	*+15.8*	*.536*	
		1	N	1		1			6	15	+22.8	141.7	- 6.0	+11.1	.504	
		3	N					2	-	5	+24.0	140.7	- 7.0	+12.3	.525	→5
			(S)					1	-	1	+23.6	139.7	- 8.0	+14.2	.522	
		2	S	1		1		1×	4	21	+24.3	138.5	- 9.2	+15.9	.537	×3→
Feb 13		*5*	*71*	*10*	*2*	*7*	*8*	*21*	*90*	*620*	*{-6.8}*	*{147.7}*		*{-16.8}*	*155*	*1057*
44.250 K /0600/	12		◇–Ħ	4	1	3	2	5	45	290	-41.5	161.9	+26.7	-150.3	.675	
		p	*S*	*1*	*1*		*1*	*4*	*27*	*166*	*-41.0*	*167.3*	*+32.1*	*-145.2*	*.704*	
		f	*N*	*3*		*3*	*1*	*1*	*18*	*124*	*-42.2*	*154.7*	*+19.5*	*-157.0*	*.637*	
		1_{1-7}	S	1c	1r				26	143	-41.1	167.9	+32.7	-144.8	.709	
			S)					2	-	6	-41.0	165.8	+30.5	-146.3	.693	
		5_1	S'					1	-	2	-40.4	164.6	+29.4	-146.5	.680	
		3_2	S				1		1	8	-40.4	162.9	+27.7	-147.9	.668	
		3_1	S					1	-	7	-40.5	161.8	+26.6	-149.0	.661	
		8_1	N	2		2			5	24	-41.4	157.1	+21.9	-154.1	.641	↑6
		8_2	N				1		1	25	-42.3	155.7	+20.5	-156.2	.643	
		2_{23}	N	1		1			12	72	-42.4	153.7	+18.5	-158.2	.633	
		4_{31}	N					1	-	3	-43.7	152.8	+17.6	-160.1	.645	
	14↓	*p•*	*Δ (N)*					1	-	(1)	(+16.2	197.8	+62.6	-68.9	.916)	
	15		◇ Ħ	3	1	1		1	31	151	+ 3.1	140.7	+ 5.5	-26.2	.201	
		p•1_{1-3}	*S*	*2b*	*1q*				*21+*	*94*	*+ 4.1*	*143.1*	*+ 7.9*	*-36.0*	*.233*	*+17+4*
		f	*N*	*1*		*1*		*1*	*10*	*57*	*+ 1.6*	*136.7*	*+ 1.5*	*-10.0*	*.148*	
		2_2	N					1	-	5	+ 2.3	136.8	+ 1.6	-10.0	.161	
		2_1	N	1		1			10	52	+ 1.5	136.7	+ 1.5	-10.0	.147	
	16↓	*f•*	*Δ S'*					1	-	2	+22.8	160.5	+25.2	-39.1	.625	
	17		◇ ◇	2		2		1	7	41	+23.4	140.5	+ 5.3	- 9.7	.513	
		p	*N*	*1*		*1*		*1*	*4*	*24*	*+22.1*	*142.9*	*+ 7.7*	*-14.4*	*.500*	
		*f•*2	*S*	*1*		*1*			*3*	*17*	*+25.1*	*137.1*	*+ 1.9*	*- 3.2*	*.531*	
		1	N	1		1			4	20	+22.0	143.2	+ 7.9	-14.9	.499	
		3	N					1	-	4	+22.7	141.6	+ 6.4	-11.8	.505	
	18↓	*p•*1	◙ *S*	1c	1r				39	291	-20.2	56.3	-79.0	+109.2	.977	*
Feb 14		*6*	*78*	*10*	*3*	*6*	*2*	*9*	*122*	*776*	*{-6.8}*	*{135.2}*		*{-17.2}*	*155*	*921*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
45.349	12		◇-ꟾ	2	1	1		6	32	220	-41.6	160.9	+40.1	-130.8	.765	
K /0822/		*p*	*S*	*1*	*1*			*1*	*21*	*134*	*-41.3*	*166.4*	*+45.7*	*-137.7*	*.802*	
		f	*N*	*1*		*1*		*5*	*11*	*86*	*-42.0*	*152.2*	*+31.4*	*-120.1*	*.708*	
		1_{1-7}	S	1c	1a*				21	132	-41.3	166.5	+45.8	-137.7	.803	
		3_1	S					1	-	2	-41.0	161.5	+40.7	-139.8	.765	
		8_1	N					3	-	8	-41.3	155.9	+35.2	-143.4	.728	→12↑11
		8_2	N					1	-	4	-41.9	154.2	+33.5	-145.1	.721	
		2_{23}	N	1		1		1×	11	74	-42.1	151.7	+30.9	-147.2	.705	×3→
	15		◇ ꟾ	2	1	1		1	27	113	+ 3.2	141.5	+20.7	-64.3	.393	
		p•1_{1-3}	*S*	*1b*	*1r*				*16*	*73*	*+ 4.1*	*143.8*	*+23.0*	*-64.7*	*.434*	
		f	*N*	*1*		*1*		*1*	*11*	*40*	*+ 1.5*	*137.2*	*+16.5*	*-63.6*	*.317*	
		2_1	N	1b		1			11	38	+ 1.5	137.2	+16.5	-63.7	.317	
		2_2	N'					1	-	2	+ 2.1	136.8	+16.1	-61.2	.317	
	17		◇ ◇	2		2		2	13	44	+22.5	142.6	+21.8	-35.5	.596	
		p	*N*	*1*		*1*		*1*	*11*	*33*	*+21.6*	*144.4*	*+23.7*	*-38.7*	*.599*	
		f	*S*	*1*		*1*		*1*	*2*	*11*	*+25.2*	*137.1*	*+16.4*	*-25.8*	*.587*	
		1	N	1b		1			11	29	+21.5	144.5	+23.8	-38.9	.599	
		3	N					1	-	4	+22.0	143.6	+22.8	-37.2	.597	
		4	S'					1	-	1	+23.3	139.6	+18.9	-30.9	.580	
		2	S	1		1			2	10	+25.4	136.8	+16.1	-25.3	.588	
	18	*p•*1	▮ *S*	1c	1r				49	222	-19.7	56.2	-64.6	+108.6	.899	
Feb 15		*4*	*55*	*7*	*3*	*4*		*9*	*121*	*599*	*{-6.9}*	*{120.8}*		*{-17.5}*	*154*	*754*
46.356	12		◇ǂꟾ	2	1	1	2	10	29	185	-41.6	160.5	+53.0	-135.8	.851	
D /0832/		*p*	*S*	*1*	*1*			*3*	*20*	*125*	*-41.3*	*165.2*	*+57.7*	*-133.8*	*.881*	
		f	*N*	*1*		*1*	*2*	*7*	*9*	*60*	*-42.2*	*150.7*	*+43.2*	*-139.9*	*.790*	
		1_{1-7}	S	1c	1a*				20	119	-41.3	165.4	+57.9	-133.7	.882	
			S)					1	-	3	-42.6	163.1	+55.1	-135.7	.872	
		3_1	S'					1	-	2	-40.9	161.2	+53.7	-134.4	.855	
		8_1	N				1	1×	1	9	-41.4	154.9	+47.4	-137.1	.814	×↑5
		9_1	S					1	-	1	-42.3	153.5	+46.0	-138.8	.809	
		10_1	N)				1		1	4	-43.0	151.9	+44.4	-140.2	.802	
		2_{23}	N	1b		1			7	36	-41.8	150.0	+42.5	-139.8	.783	
		(4_{31})	(N)					6	-	11	-43.8	149.1	+41.6	-142.4	.788	
	15		◇ ◇	3		2			16	64	+ 3.8	142.7	+35.2	-74.1	.600	
		p•1_{1-3}	*S*	*1b*		*1*			*12*	*49*	*+ 4.5*	*144.2*	*+36.7*	*-73.7*	*.623*	
		f•2_1	*N*	*2b*		*1*			*4*	*15*	*+ 1.7*	*137.8*	*+30.3*	*-75.2*	*.524*	
	17		▽-◇	1		1	1	7	9	32	+21.1	144.0	+36.6	-51.1	.717	
		p	*N*	*1*		*1*		*6*	*8*	*26*	*+21.0*	*144.8*	*+37.3*	*-51.9*	*.723*	
		f	*S*				*1*	*1*	*1*	*6*	*+21.9*	*140.6*	*+33.1*	*-47.6*	*.690*	
		1	N	1b		1			8	17	+20.8	145.7	+38.2	-52.7	.730	
		3	N					1	-	3	+21.5	144.4	+36.9	-50.9	.722	
			(N)					2	-	2	+18.9	144.3	+36.8	-54.0	.704	↑12
			S					1	-	2	+18.9	143.1	+35.6	-53.1	.691	
		5	N'					3	-	4	+22.3	141.8	+34.3	-48.0	.703	→7
		4	S				1		1	4	+23.4	139.3	+31.9	-44.8	.690	
	18	*p•*1	ꟾ *S*	1a	1q				27	180	-19.6	56.4	-51.1	+109.7	.781	
Feb 16		*4*	*51*	*7*	*2*	*4*	*3*	*17*	*81*	*461*	*{-6.9}*	*{107.5}*		*{-17.9}*	*100*	*564*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
47.334	12		◇≠¤	5	1	4	4	7	38	240	-41.9	158.3	+63.7	-133.3	.912	
D /0801/		*p*	*S*	*3*	*1*	*2*	*1*	*1*	*31*	*175*	*-41.6*	*161.3*	*+66.7*	*-132.3*	*.927*	
		f	*N*	*2*		*2*	*3*	*6*	*7*	*65*	*-42.7*	*150.2*	*+55.6*	*-135.8*	*.871*	
		1_{1-7}	S	1c	1a*				18	120	-41.4	164.5	+69.9	-131.6	.943	
		9_1	S	1		1		$1^{\times}$	4	19	-41.8	155.7	+61.1	-133.4	.900	$^{\times}{}_{2}\leftarrow$
		8_1	N'					2	-	6	-41.1	153.8	+59.2	-133.1	.888	
		9_2	S	1		1a	$1^{\times}$		9	36	-42.0	153.6	+59.0	-134.1	.889	$^{\times}{}_{4}\leftarrow$
			N)					1	-	6	-43.2	152.3	+57.7	-135.7	.885	
		10_2	N	1		1			2	8	-42.5	150.7	+56.1	-135.4	.874	
		10_1	N				2	$2^{\times}$	2	28	-43.6	149.9	+55.3	-136.8	.872	$\rightarrow\underline{13}\uparrow\underline{5}^{\times}{}_{14}$
		2_{23}	N	1		1	1^{+}	$1^{\times}$	3	17	-41.8	148.3	+53.7	-135.3	.857	$^{+}{}_{5}\rightarrow 8^{\times}{}_{3}\downarrow 7$
	15	*p*•1_{1-3}	◇ *S*	2		1			8	37	+ 4.4	144.6	+50.0	-78.6	.782	
	17		△-◇	3		3		6	10	48	+21.1	144.5	+49.9	-58.8	.835	
		p	*N*	*3*		*3*		*4*	*10*	*42*	*+21.0*	*145.1*	*+50.5*	*-59.2*	*.839*	
		f	*S*					*2*	-	*6*	*+21.7*	*140.2*	*+45.6*	*-56.0*	*.802*	
		1	N	1		1		2	4	12	+20.2	147.2	+52.6	-61.2	.854	
		3	N	1		1		$1^{\times}$	3	16	+20.6	146.1	+51.5	-60.1	.846	$^{\times}{}_{3}\rightarrow$
			N)					1	-	2	+20.7	143.7	+49.1	-59.0	.827	
			(S)					1	-	2	+18.8	143.1	+48.5	-60.8	.814	
		5	N'	1		1			3	12	+22.4	141.8	+47.2	-56.2	.818	
		4	S					1	-	4	+23.2	138.7	+44.1	-53.6	.796	
	18	*p*•1	¤ *S*	1c	1q				23	189	-19.4	56.5	-38.1	+112.4	.632	
Feb 17		*4*	*52*	*11*	*2*	*8*	*4*	*13*	*79*	*514*	*{-6.9}*	*{ 94.6}*		*{-18.2}*	*87*	*585*
48.566	12		◇-◇	3	1	2	1		33	280	-42.0	157.1	+78.7	-131.7	.973	
D /1335/		*p*	*S*	*2*	*1*	*1*			*28*	*221*	*-41.7*	*159.5*	*+81.1*	*-131.3*	*.981*	
		f•10_{12}	*N*	*1b*		*1*	*1*$^{\times}$		*(5)*	*59*	*-43.1*	*148.1*	*+69.7*	*-133.4*	*.944*	$^{\times}{}_{8}\leftarrow 8\downarrow 6$
		1_{1-7}	S	1c	1u				13	128	-41.4	162.3	+83.9	-130.9	.988	
		9_{12}	S	1c		1a			15	93	-42.1	155.7	+77.3	-131.8	.971	
	15↓	*p*•1_{1-3}	▽ *S*				1		1	4	+ 4.2	144.8	+66.4	-82.4	.923	
	17	*p*	◇ *N*	1		1	1		11	28	+21.4	143.9	+65.5	-64.1	.941	
		1	N				1		1	6	+19.7	148.9	+70.5	-67.2	.964	
		5	N	1		1			10	22	+21.9	142.5	+64.1	-63.3	.935	
	18		(△)¤	1	1			7	25	147	-19.2	56.3	-22.1	+121.7	.420	
		p	*S*	*1*	*1*			*2*	*25*	*141*	*-19.3*	*56.4*	*-22.0*	*+122.0*	*.419*	
		(f)	*N*					*5*	-	*6*	*-17.6*	*54.1*	*-24.3*	*+116.6*	*.440*	
			N					2	-	2	-17.5	57.6	-20.8	+119.4	.391	
			S					2	-	2	-17.9	57.1	-21.3	+119.7	.396	
		1	S	1c	1r				25	139	-19.3	56.4	-22.0	+122.0	.419	
			N					3	-	4	-17.6	52.3	-26.1	+115.2	.465	→10
Feb 18		*4*	*48*	*5*	*2*	*3*	*3*	*7*	*70*	*459*	*{-7.0}*	*{ 78.4}*		*{-18.6}*	*68*	*413*
49.308	12→		(▽ ▽)				2		2	42	-42.3	151.5	+83.0	-131.9	.985	
D /0723/		*p*•9_{12}	*S*				*(1)*		*(1)*	*(27)*	*(-41.9*	*154.5*	*+86.0*	*-131.5*	*.992)*	
		f•10_{12}	*N*				*(1)*		*(1)*	*15*	*-43.1*	*146.1*	*+77.5*	*-132.7*	*.972*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	17→	*p•5*	◇ *N*	1			1		11	43	+22.1	(141.8)	(+73.1)	-65.4	.976	
	18		(△)¤	1	1			3	23	148	-19.1	56.4	-12.3	+136.5	.294	
		p•1	*S*	*1c*	*1r*				*23*	*144*	*-19.1*	*56.4*	*-12.3*	*+136.5*	*.293*	
		(f)	*N*					*3*	-	*4*	*-20.8*	*54.6*	*-14.0*	*+136.5*	*.334*	
			N					1	-	1	-17.7	57.1	-11.5	+134.6	.268	
			(N)					1	-	2	-23.9	54.0	-14.6	+141.9	.376	
			N					1	-	1	-17.8	53.4	-15.2	+127.4	.315	
Feb 19		*3*	*36*	*2*	*1*	*1*	*2*	*3*	*36*	*233*	*{-7.0}*	*{ 68.6}*		*{-18.8}*	*49*	*315*
50.567	18		(△)¤	1	1			2	18	112	-19.2	56.3	+ 4.2	-161.6	.225	
D /1336/		*p•1*	*S*	*1c*	*1p*				*18+*	*109*	*-19.1*	*56.4*	*+ 4.3*	*-161.2*	*.223*	*+17+*
		(f)•	*N*					*2*	-	*3*	*-24.3*	*53.2*	*+ 1.2*	*-176.3*	*.298*	*→12*
Feb 20		*1*	*14*	*1*	*1*			*2*	*18*	*112*	*{-7.1}*	*{ 52.1}*		*{-19.2}*	*35*	*218*
51.427	18	*p*	¤ *S*	1	1			1	16	102	-19.0	56.4	+15.7	-129.4	.333	
D /1016/		1	S	1c	1r				16	98	-19.0	56.5	+15.8	-129.3	.334	
			(S)					1	-	4	-18.3	54.5	+13.8	-131.3	.302	
Feb 21		*1*	*14*	*1*	*1*			*1*	*16*	*102*	*{-7.1}*	*{ 40.7}*		*{-19.5}*	*28*	*192*
52.456	18		(△)¤	1	1			1	16	83	-19.1	56.2	+29.1	-115.8	.512	
D /1057/		*p•1*	*S*	*1c*	*1r*				*16*	*82*	*-19.0*	*56.2*	*+29.1*	*-115.7*	*.512*	
		(f)•	*(N)*					*1*	-	*1*	*-23.5*	*53.9*	*+26.8*	*-125.5*	*.509*	
Feb 22		*1*	*13*	*1*	*1*			*1*	*16*	*83*	*{-7.1}*	*{ 27.2}*		*{-19.8}*	*27*	*143*
53.448	18	*p*	◇ *S*	1	1			1	15	81	-19.2	56.3	+42.2	-110.6	.680	
D /1041/		1	S	1c	1r				15	80	-19.2	56.3	+42.2	-110.6	.680	
			(S)					1	-	1	-19.6	53.1	+39.0	-112.3	.643	
Feb 23		*1*	*12*	*1*	*1*			*1*	*15*	*81*	*{-7.1}*	*{ 14.1}*		*{-20.1}*	*22*	*119*
54.347	18	*p•1*	◇ *S*	1			1		13	78	-19.0	56.1	+53.8	-108.3	.807	
D /0819/																
Feb 24		*1*	*12*	*1*			*1*		*13*	*78*	*{-7.2}*	*{ 2.3}*		*{-20.3}*	*16*	*92*
ROT No *1652*																
55.397	18	*p•1*	◇ *S*	1			1		13	84	-19.2	55.9	+67.4	-107.9	.918	
D /0931/																
Feb 25		*1*	*11*	*1*			*1*		*13*	*84*	*{-7.2}*	*{348.4}*		*{-20.6}*	*10*	*67*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
56.498	18	*p*•1	◇	*S*	1		1		9	78	-19.3	55.5	+81.5	-108.3	.985	
D /1157/																
Feb 26		*1*	*11*		*1*		*1*		*9*	*78*	*{-7.2}*	*{333.9}*		*{-20.9}*	*3*	*27*
57.519	NO SUNSPOTS AT ALL															
D /1228/																
Feb 27																
58.299	NO SUNSPOTS AT ALL															
D /0710/																
Feb 28																
59.561	NO SUNSPOTS AT ALL															
D /1328/																
March 1																
60.303	19	*f*•2	(ꟾ)	*S*	(1)		(1)		(-)	94	+17.3	202.8	-81.0	+71.6	.994	
D /0717/																
March 2		*1*	*10*		*1*		*1*		*-*	*94*	*{-7.2}*	*{283.8}*		*{-21.9}*	*0*	*20*
61.092	19	*f*•2	ꟾ	*S*	1c		1r		22	108	+17.7	202.6	-70.8	+69.2	.964	
I /0213/																
March 3		*1*	*11*		*1*		*1*		*22*	*108*	*{-7.2}*	*{273.4}*		*{-22.1}*	*12*	*60*
62.460	19	*f*	ꟾ	*S*	1		1	1	16	82	+17.5	202.1	-53.3	+64.2	.851	
D /1102/		2	S		1c		1q		16	80	+17.5	202.2	-53.2	+64.2	.851	
		4_1	(S)					1	-	2	+17.6	199.9	-55.5	+64.8	.869	
March 4		*1*	*12*		*1*		*1*	*1*	*16*	*82*	*{-7.2}*	*{255.4}*		*{-22.4}*	*17*	*86*
63.583	19	*f*	◇	*S*	1		1	1	13	76	+17.4	201.9	-38.7	+56.7	.715	
D /1400/		2	S		1		1		13	74	+17.4	202.0	-38.6	+56.7	.714	
		4_1	(S)					1	-	2	+18.0	199.6	-41.0	+57.5	.742	
	20	*p*•(1)	Δ	*N'*				1	-	1	+21.5	200.5	-40.1	+52.9	.754	
March 5		*2*	*22*		*1*		*1*	*2*	*13*	*77*	*{-7.3}*	*{240.6}*		*{-22.6}*	*19*	*107*
64.420	19	*f*	◇	*S*	1		1	1	12	73	+17.3	202.0	-27.5	+47.7	.599	
D /1005/		2	S		1		1		12	72	+17.3	202.0	-27.5	+47.7	.599	
		4_1	(S)					1	-	1	+18.5	199.5	-30.1	+48.7	.635	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	/20/															INTERMITTENT
March 6		*1*	*12*	*1*		*1*		*1*	*12*	*73*	*{-7.3}*	*{229.6}*		*{-22.8}*	*20*	*117*
65.421	19	*f*	◇ *S*	1		1		1	10	49	+17.2	201.9	-14.5	+30.2	.478	
D /1006/		2	S	1b		1			10	48	+17.2	201.9	-14.5	+30.1	.477	
		4_1	(S)					1	-	1	+18.6	199.6	-16.8	+32.5	.513	
	/20/															INTERMITTENT
March 7		*1*	*12*	*1*		*1*		*1*	*10*	*49*	*{-7.3}*	*{216.4}*		*{-23.0}*	*18*	*86*
66.301	19	*f*•2	◇ *S*	1b		1			10	42	+17.2	201.8	- 3.0	+6.9	.419	
D /0713/	20		◇–▽	1		1	3	4	7	35	+21.2	200.1	- 4.7	+9.0	.484	
		p	*N*				*2*	*3*	*2*	*20*	*+20.6*	*200.7*	*- 4.1*	*+8.0*	*.474*	
		f•2	*S*	*1*		*1*	*1*+	*1*×	*5*	*15*	*+21.9*	*199.3*	*- 5.5*	*+10.3*	*.497*+3+5×2+9	
		1	N				2		2	9	+20.5	201.5	- 3.3	+6.6	.471	
			(N)					2	-	6	+20.6	200.4	- 4.4	+8.7	.474	
		3	N'					1	-	5	+20.8	199.8	- 5.0	+9.8	.479	
March 8		*2*	*23*	*2*		*2*	*3*	*4*	*17*	*77*	*{-7.3}*	*{204.8}*		*{-23.2}*	*30*	*138*
67.372	19		◇ △	1		1		2	7	49	+17.2	201.8	+11.1	-24.1	.452	
D /0856/		*p*•	*(N)*					*1*	-	*1*	*+16.0*	*210.6*	*+20.0*	*-40.3*	*.510*	
		f	*S*	*1*		*1*		*1*	*7*	*48*	*+17.2*	*201.6*	*+10.9*	*-23.8*	*.451*	
		2	S	1b		1			7	47	+17.2	201.7	+11.0	-23.9	.451	
		4_2	(S)					1	-	1	+17.3	199.2	+ 8.5	-18.9	.439	
	20		◇–◇	3		2		2	20	89	+21.5	199.3	+ 8.4	-15.9	.501	
		p	*N*	*2*		*1*		*2*	*5*	*18*	*+20.5*	*201.8*	*+11.2*	*-21.3*	*.499*	
		f•2	*S*	*1*		*1*			*15*	*71*	*+21.7*	*198.7*	*+ 7.7*	*-14.5*	*.501*	
		1	N	2		1		1×	5	17	+20.5	201.9	+11.3	-21.6	.499	×→
		3	N					1	-	1	+21.1	199.3	+ 8.6	-16.5	.495	
March 9		*2*	*25*	*4*		*3*		*4*	*27*	*138*	*{-7.2}*	*{190.7}*		*{-23.4}*	*47*	*242*
68.303	19		◇ △	1		1		2	9	20	+16.9	201.7	+23.3	-43.4	.553	
D /0716/		*p*•	*(N)*					*1*	-	*1*	*+15.8*	*210.2*	*+31.8*	*-53.6*	*.631*	
		f	*S*	*1*		*1*		*1*	*9*	*19*	*+17.0*	*201.3*	*+22.9*	*-42.9*	*.549*	
		2	S	1b		1			9	18	+17.0	201.4	+23.0	-43.0	.550	
		4_2	(S)					1	-	1	+16.6	199.0	+20.6	-40.4	.522	
	20		¤ ◇	4	1	2			27	94	+21.6	198.7	+20.3	-34.2	.577	
		p•1	*N*	*3*×		*2*			*8*+	*10*	*+20.2*	*202.9*	*+24.5*	*-40.8*	*.598*	+4+2+2
		f•2	*S*	*1b*	*1*				*19*	*84*	*+21.8*	*198.2*	*+19.8*	*-33.4*	*.574*	×→7
March 10		*2*	*24*	*5*	*1*	*3*		*2*	*36*	*114*	*{-7.2}*	*{178.4}*		*{-23.6}*	*59*	*187*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
69.290	19	*f*	◊ *S*	1		1		1	5	20	+17.0	201.2	+35.9	-55.2	.683	
D /0658/		2	S	1		1			5	19	+17.1	201.3	+36.0	-55.2	.685	
		4_2	(S)					1	-	1	+16.0	198.8	+33.4	-54.8	.650	
	20		⌅ △	2	1			2	16	73	+21.8	198.2	+32.8	-47.1	.688	
		p•1	*N*					*2*	-	*5*	*+20.3*	*203.0*	*+37.6*	*-52.6*	*.723*	
		f•2	*S*	*2b*	*1*				*16*	*68*	*+21.9*	*197.8*	*+32.4*	*-46.7*	*.685*	
March 11		*2*	*23*	*3*	*1*	*1*		*3*	*21*	*93*	{*-7.2*}	{*165.4*}		{*-23.8*}	*31*	*135*
70.434	19	*f•2*	▽ *S*				1		1	8	+17.3	201.8	+51.4	-63.7	.835	
D /1026/	20	*f•2*	◊ *S*	1b		1			14	67	+21.9	197.4	+47.1	-56.5	.817	
March 12		*2*	*22*	*1*		*1*	*1*		*15*	*75*	{*-7.2*}	{*150.3*}		{*-24.0*}	*17*	*86*
71.211	19	*f•2*	△ *S*				1		-	1	+17.1	202.0	+61.9	-67.6	.914	
K /0504/	20	*f•2*	◊ *S*	1		1			6	23	+21.6	196.6	+56.6	-61.0	.889	
March 13		*2*	*20*	*1*		*1*	*1*		*6*	*24*	{*-7.2*}	{*140.1*}		{*-24.2*}	*5*	*22*
72.263	20	*f•2*	△ *S*				1		-	(3)	+21.1	196.2	+69.9	-65.7	.962	
K /0618/	21	*p•*	△ *(S)*				1		-	(4)	(-21.5	58.6	-67.7	+110.3	.918)	
March 14		*2*	*20*				*2*		-	*7*	{*-7.2*}	{*126.2*}		{*-24.3*}	*0*	*5*
73.201	21	*p•*	△ *(S)*				1		-	(4)	(-20.9	58.1	-55.8	+110.5	.825)	
K /0449/																
March 15		*1*	*10*				*1*		-	*4*	{*-7.2*}	{*113.9*}		{*-24.5*}	*0*	*5*
74.282	22	*p•*	△ *(N)*				1		-	3	+22.1	147.3	+47.7	-56.7	.822	
D /0646/																
March 16		*1*	*10*				*1*		-	*3*	{*-7.1*}	{ *99.6*}		{*-24.7*}	*0*	*3*
75.430	/22/															INTERMITTENT
D /1019/									N O	S U N S P O T	G R O U P S					
March 17										LASTING FOR TWO OR MORE DAYS						
76.282	22	*p•*	△ *(N)*				1		-	7	+22.3	146.9	+73.7	-65.3	.978	
D /0646/																
March 18		*1*	*10*				*1*		-	*7*	{*-7.1*}	{ *73.2*}		{*-25.0*}	*0*	*3*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
77.292 D /0701/ *March 19*				N O S U N S P O T S A T A L L												
78.430 D /1019/ *March 20*				N O S U N S P O T S A T A L L												
79.354 D /0830/ *March 21*				N O S U N S P O T S A T A L L												
80.529 D /1242/	23 ↑		◇ ◇	4	3		1		11	42	-29.8	51.7	+34.5	-129.6	.640	
		p	*S*	*2*	*1*		*1*		*5*	*27*	*-29.2*	*52.3*	*+35.1*	*-128.4*	*.643*	
		f•	*N*	*2*	*2*				*6*	*15*	*-30.8*	*50.6*	*+33.3*	*-131.8*	*.635*	*+5*
		1_1	S	2	1				5	22	-29.1	52.4	+35.2	-128.2	.644	
		1_2	S				1		-	5	-29.5	51.9	+34.6	-129.1	.639	
March 22		*1*	*11*	*4*	*3*		*1*		*11*	*42*	*{-7.0}*	*{ 17.2}*		*{-25.5}*	*17*	*65*
81.293 D /0702/	23		▽ ◇	1	1	2			5	17	-29.2	52.2	+45.0	-123.6	.744	
		p	*S*	*1*	*1*	*1*			*4*	*13*	*-28.8*	*53.0*	*+45.8*	*-122.8*	*.750*	
		f•2	*N*			*1*			*1*	*4*	*-30.5*	*49.6*	*+42.5*	*-126.3*	*.724*	
		1_1	S	1	1				3	8	-28.8	53.3	+46.1	-122.7	.753	
		1_2	S			1			1	5	-28.8	52.5	+45.3	-122.9	.745	
March 23		*1*	*10*	*1*	*1*	*2*			*5*	*17*	*{-6.9}*	*{ 7.2}*		*{-25.6}*	*6*	*23*
ROT No *1653*																
82.283 D /0647/	23 ↓	*p*•1_1	▽	*S*			1		1	6	-28.5	54.2	+60.1	-118.9	.872	
	24 ↑	*f*•2	Δ	*S)*				1	-	5	+25.0	42.7	+48.5	-54.1	.840	
March 24		*2*	*20*				*1*	*1*	*1*	*11*	*{-6.9}*	*{354.1}*		*{-25.7}*	*1*	*11*
83.653 D /1540/	24 →		Δ Δ					2	-	8	+25.5	44.1	+68.0	-60.8	.960	
		p•		*N)*				*1*	-	*(6)*	*+25.5*	*44.8*	*+68.7*	*-61.0*	*.963*	
		f•*(2)*		*S)*				*1*	-	*(2)*	*+25.5*	*42.1*	*+66.0*	*-60.3*	*.951*	
	25 →	*p*•1	◇	*N*	1		1		6	26	+24.9	264.8	-71.3	+62.2	.972	
March 25		*2*	*20*		*1*		*1*	*2*	*6*	*34*	*{-6.8}*	*{336.1}*		*{-25.8}*	*3*	*17*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
84.361	25		Δ ◊	1		1	1	1	6	24	+25.1	264.7	-62.1	+59.5	.930	
D /0840/		p•1	N	1		1	1×		6	20	+25.0	265.0	-61.7	+59.5	.928	×7←5
		f•2	S'					1	-	4	+25.4	262.9	-63.8	+59.7	.940	
March 26		*1*	*10*	*1*		*1*	*1*	*1*	*6*	*24*	{-6.8}	{326.7}		{-25.9}		*4* *18*
85.423	25		Δ-◊	1		1		4	3	16	+25.1	263.7	-49.1	+54.3	.844	
D /1010/		p	N	1		1		3	3	12	+25.0	264.2	-48.6	+54.1	.840	
		f•2	S					1	-	4	+25.3	262.0	-50.7	+54.9	.857	
		1	N	1		1		1×	3	9	+25.3	264.7	-48.1	+53.6	.837	×←
		3	N					2	-	3	+24.2	262.8	-50.0	+55.7	.847	
March 27		*1*	*10*	*1*		*1*		*4*	*3*	*16*	{-6.8}	{312.7}		{-25.9}		*4* *17*
86.208	25	p	Δ N					2	-	3	+24.9	264.2	-38.2	+48.1	.755	
K /0500/		1	N					1	-	2	+25.3	264.8	-37.6	+47.3	.752	
		3	N					1	-	1	+24.2	263.0	-39.3	+49.7	.760	
	26 ↑		◊ Δ	1		1		1	2	10	+21.0	311.1	+ 8.8	-17.2	.487	
		p•1	N					1	-	1	+20.9	312.9	+10.5	-20.3	.494	
		f•2	S	1		1			2	9	+21.0	310.9	+ 8.6	-16.8	.486	
March 28		*2*	*20*	*1*		*1*		*3*	*2*	*13*	{-6.7}	{302.4}		{-26.0}		*3* *21*
87.217	25	p•5	◊ N	1		1			3	18	+23.6	264.1	-25.0	+38.1	.630	
K /0513/																
	26 ↓		▽ Δ				1	3	1	12	+20.9	312.3	+23.2	-39.0	.589	
		p	N					2	-	5	+20.7	314.5	+25.4	-41.7	.605	
		f•2	S				1	1×	1	7	+21.1	310.8	+21.7	-37.0	.577	×→
		1	N					1	-	4	+20.6	314.7	+25.6	-42.1	.606	
			N					1	-	1	+21.2	313.5	+24.4	-40.1	.600	
March 29		*2*	*21*	*1*		*1*	*1*	*3*	*4*	*30*	{-6.7}	{289.0}		{-26.1}		*6* *47*
88.220	25 ↓		Δ ▽				1	3	1	13	+23.1	263.8	-12.0	+21.1	.531	
K /0517/		p•5	N				1	1×	1	10	+23.3	264.3	-11.5	+20.2	.531	×4
		f•	S)					2	-	3	+22.5	262.2	-13.6	+24.2	.532	
March 30		*1*	*10*				*1*	*3*	*1*	*13*	{-6.6}	{275.8}		{-26.1}		*2* *21*

89.201
K /0449/
March 31

N O S U N S P O T S AT ALL

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
90.330	27 ↑		Δ Δ					2	-	3	+24.6	250.5	+ 2.5	-4.4	.521	
D /0755/		p•1	N					1	-	1	+24.6	253.3	+ 5.4	-9.4	.524	
		f•2	S					1	-	2	+24.6	249.1	+ 1.1	-1.9	.519	
Apr 1		1	10					2	-	3	{-6.5}	{248.0}		{-26.2}		0 5
91.362	27		◇ Δ	2		2		3	4	21	+24.9	251.1	+16.8	-26.9	.581	*
D /0841/		p•1	N					2	-	5	+24.4	253.9	+19.6	-31.0	.594	
		f•2	S	2		2		1×	4	16	+25.0	250.2	+15.9	-25.6	.577	×3→6
Apr 2		1	11	2		2		3	4	21	{-6.5}	{234.4}		{-26.3}		7 35
92.253	27		◇ Δ	2		2		3	4	13	+24.8	251.5	+28.9	-40.9	.672	
K /0605/		p•	N					3	-	4	+24.5	253.6	+31.0	-43.2	.687	→6
		f	S	2		2			4	9	+24.9	250.6	+28.0	-39.9	.665	
		2_1	S	1		1			2	5	+24.9	251.3	+28.7	-40.6	.671	
		2_2	S	1		1			2	4	+24.9	249.7	+27.1	-39.1	.657	
Apr 3		1	10	2		2		3	4	13	{-6.4}	{222.6}		{-26.3}		6 20
93.288	27		Δ ▽				1	2	1	8	+24.9	253.1	+44.2	-52.2	.802	
D /0655/		p•	N				1		1	5	+24.4	254.6	+45.7	-53.6	.812	
		f	S					2	-	3	+25.7	250.7	+41.8	-49.9	.786	
		(2_1)	S'					1	-	1	+26.2	251.4	+42.5	-49.8	.795	
		(2_2)	S					1	-	2	+25.4	250.3	+41.4	-50.0	.781	
Apr 4		1	10				1	2	1	8	{-6.3}	{209.0}		{-26.3}		1 9
94.191	27 ↓	p•	Δ N'					1	-	4	+24.1	253.3	+56.2	-58.7	.890	
K /0435/																
Apr 5		1	10					1	-	4	{-6.3}	{197.0}		{-26.3}		0 4
95.636	28 ↑		▽ ◇	1		1	1		8	23	+18.0	243.8	+65.9	-68.0	.937	
D /1516/		p•1	N	1		1			7	15	+17.8	244.9	+67.0	-68.5	.943	
		f•2	S				1		1	8	+18.5	241.8	+63.9	-67.1	.926	
Apr 6		1	10	1		1	1		8	23	{-6.2}	{178.0}		{-26.3}		6 16
96.295	28 →		Δ ▽				1	2	1	11	+17.2	244.9	+75.6	-71.0	.980	
D /0704/		p	N				1	1	1	9	+17.0	245.3	+76.0	-71.3	.981	
		f•2	S'					1	-	2	+18.0	242.9	+73.6	-69.8	.973	
		1	N'					1	1	5	+17.0	245.9	+76.6	-71.4	.983	
			N'				1		-	4	+17.0	244.6	+75.3	-71.2	.979	
Apr 7		1	10				1	2	1	11	{-6.2}	{169.3}		{-26.3}		0 5

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
97.541									N O	S U N S P O T S	A T A L L					
D /1259/																
Apr 8																
98.550									N O	S U N S P O T S	A T A L L					
D /1312/																
Apr 9																
99.298									N O	S U N S P O T S	A T A L L					
D /0709/																
Apr 10																
100.450	29	⊢p•1_1	⌅	*S*	1c	1u			21	149	-21.0	30.6	-83.4	+110.4	.991	
D /1048/																
Apr 11		*1*	*11*		*1*	*1*			*21*	*149*	{*-5.9*}	{*114.4*}		{*-26.3*}	*6*	*39*
101.390	29	*p*	⌅	*S*	2	2			35	289	-20.2	27.1	-74.9	+109.4	.961	*
D /0922/		1_1	S		1c	1q			19	174	-20.6	29.6	-72.4	+109.8	.950	
		3	S		1c	1q			16	115	-19.6	23.2	-78.8	+108.9	.977	
Apr 12		*1*	*13*		*2*	*2*			*35*	*289*	{*-5.8*}	{*102.0*}		{*-26.2*}	*19*	*158*
102.550	29		◇≠⌅	δ	7	2	3	6	59	379	-20.8	25.5	-61.2	+110.6	.877	
D /1311/		*p*		*S*	*4*	*2*	*1*		*39*	*255*	*-20.3*	*26.1*	*-60.6*	*+110.2*	*.872*	
		f		*N*	*3*		*2*	*6*	*20*	*124*	*-21.7*	*24.2*	*-62.5*	*+111.6*	*.888*	
		1_1	S		2b	1p			17	124	-20.7	28.6	-58.1	+110.8	.852	
		1_{23}	S		1		1		3	35	-20.7	26.7	-60.0	+110.6	.868	
		2_4	N		2b		1	2×	13+	87	-22.1	24.8	-61.9	+112.1	.884	+8+5×6←
		2_3	N					2	-	5	-19.8	24.7	-62.0	+109.5	.883	
		3	S		1c	1a*			19	96	-19.7	22.6	-64.1	+109.2	.898	
		2_2	N		1		1		7	21	-21.2	22.5	-64.2	+110.8	.900	
		2_1	N					2	-	11	-20.8	22.4	-64.3	+110.4	.900	
Apr 13		*1*	*17*		*7*	*2*	*3*	*6*	*59*	*379*	{*-5.7*}	{*86.7*}		{*-26.2*}	*56*	*363*
103.100	29		◇≠⌅	δ	5	2	2	7 1	66	472	-20.4	25.8	-53.6	+111.1	.811	
I /0224/		*p*		*S*	*4*	*2*	*1*	*3 1*	*53*	*403*	*-20.3*	*26.3*	*-53.2*	*+111.1*	*.806*	
		f		*N*	*1*		*1*	*4*	*13*	*69*	*-20.8*	*23.2*	*-56.2*	*+111.2*	*.836*	
		1_1	S		1c	1p			16	140	-20.6	28.6	-50.9	+111.9	.785	
		1_{23}	S		2b		1		14+	90	-19.9	27.4	-52.0	+110.8	.795	+12+2
			S					1	1	16	-20.7	26.8	-52.6	+111.7	.802	
			S					2	2	45	-21.5	26.1	-53.3	+112.5	.810	
		2_3	N					2	2	19	-19.8	24.4	-55.0	+110.3	.824	
		2_4	N					1	1	14	-21.7	23.3	-56.2	+112.3	.836	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		3	S	1c	1q				20	108	-19.7	22.6	-56.8	+109.8	.840	
		2_2	N	1		1			9	27	-21.0	22.6	-56.9	+111.4	.842	
		2_1	N				1		1	9	-20.7	22.5	-56.9	+111.0	.842	
		3_0	(S)					1	-	4	-20.4	19.6	-59.9	+110.4	.866	
Apr 14		*1*	*21*	*5*	*2*	*2*	*7*	*1*	*66*	*472*	*{-5.7}*	*{ 79.4}*		*{-26.1}*	*76*	*551*
104.337	29		◇≠Ж	7	1	4		9	54	306	-20.1	26.3	-36.8	+115.7	.625	
D /0805/		*p*	*S*	*4*	*1*	*2*		*5*	*46*	*259*	*-20.0*	*26.9*	*-36.2*	*+115.7*	*.618*	
		f	*N*	*3*		*2*		*4*	*8*	*47*	*-20.9*	*23.2*	*-39.9*	*+115.4*	*.665*	
		1_{23}	S	2b		1			15+	75	-19.3	28.5	-34.6	+115.3	.595	+9+6
		1_1	S	1b	1p				19	114	-20.4	28.4	-34.7	+117.0	.601	
			S					2	-	3	-21.7	25.6	-37.5	+117.7	.640	→14
			S					1	-	1	-18.9	24.6	-38.5	+113.0	.642	
		2_3	N					2	-	5	-19.8	24.2	-38.9	+114.2	.650	
		2_4	N					2	-	2	-21.8	23.4	-39.7	+117.0	.668	
		2_2	N	2		1			6	32	-20.9	23.3	-39.8	+115.5	.664	
		3	S	1c		1p			12	64	-19.9	22.6	-40.5	+113.9	.670	
		2_1	N	1		1			2	8	-21.1	22.3	-40.8	+115.5	.677	
			(S)					1	-	1	-20.8	21.2	-41.9	+114.7	.689	
		(3_0)	(S)					1	-	1	-20.6	19.8	-43.3	+113.8	.704	
	30	↑*p*•1	∇ *S*				1		1	4	-24.3	62.3	- 0.8	+177.8	.323	
Apr 15		*2*	*30*	*7*	*1*	*4*	*1*	*9*	*55*	*310*	*{-5.6}*	*{ 63.1}*		*{-26.1}*	*86*	*485*
105.210	29		∇≠Ж	4	1	3	2	3	42	250	-20.0	26.6	-25.0	+123.2	.476	
K /0503/		*p*	*S*	*4*	*1*	*3*		*2*	*40*	*234*	*-19.9*	*26.9*	*-24.7*	*+123.3*	*.472*	
		f	*N*				*2*	*1*	*2*	*16*	*-21.0*	*22.8*	*-28.8*	*+121.8*	*.532*	
			S					1	-	3	-19.9	29.9	-21.7	+126.2	.433	
		1_3	S	1		1			4	24	-19.3	29.8	-21.8	+125.0	.429	
		1_1	S	1c	1a				16	103	-20.1	28.1	-23.5	+124.8	.458	
		1_2	S	1		1			7	45	-19.5	28.0	-23.6	+123.5	.455	
			S					1	-	3	-19.2	24.1	-27.5	+119.5	.503	
		2_2	N				1	1×	1	11	-20.9	23.1	-28.5	+121.8	.527	×3
		3	S	1c		1a			13	56	-20.1	22.5	-29.1	+119.9	.529	
		2_1	N				1		1	5	-21.3	22.0	-29.5	+121.7	.542	
	30		◇ Δ	1		1		2	5	11	-24.5	60.5	+ 8.9	-156.6	.356	
		p	*S*					*2*	-	*2*	*-24.4*	*62.8*	*+11.2*	*-151.5*	*.372*	
		f•2	*N*	*1*		*1*			*5*	*9*	*-24.5*	*60.0*	*+ 8.4*	*-157.8*	*.353*	
		1	S					1	-	1	-24.7	63.3	+11.7	-150.8	.380	
			S					1	-	1	-24.1	62.3	+10.7	-152.1	.363	
Apr 16		*2*	*29*	*5*	*1*	*4*	*2*	*5*	*47*	*261*	*{-5.5}*	*{ 51.6}*		*{-26.0}*	*83*	*460*
106.398	29		Δ≠Ж	3	1	2		17	33	237	-20.0	25.9	-10.0	+147.9	.304	
D /0933/		*p*	*S*	*3*	*1*	*2*		*9*	*33*	*222*	*-19.9*	*26.3*	*- 9.6*	*+148.6*	*.298*	
		f	*N*					*8*	-	*15*	*-21.7*	*19.3*	*-16.6*	*+137.6*	*.392*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_3	S	1		1		1^x	2	7	-19.8	30.6	- 5.2	+161.0	.264	×↑
		1_4	S					2	-	2	-19.7	29.4	- 6.5	+156.8	.271	
		1_{12}	S	1b	1r				21	154	-19.9	27.5	- 8.4	+151.4	.287	
			S					2	-	5	-19.3	25.7	-10.2	+145.5	.296	↑5
		1_5	S					1	-	1	-19.0	25.1	-10.8	+143.2	.296	train
			S)					1	-	1	-18.6	24.2	-11.7	+140.3	.302	
		2_3	N					2	-	3	-20.5	24.1	-11.8	+143.8	.326	↑6
		2_2	N					1	-	2	-21.2	22.7	-13.2	+142.1	.349	
		3	S	1b		1a			10	49	-19.9	22.5	-13.4	+139.3	.335	
		2_1	N					1	-	2	-21.2	21.5	-14.4	+139.9	.362	
		(3_0)	(S)					2	-	3	-20.2	19.0	-16.7	+133.6	.377	↑10
		4_1	N					4	-	8	-22.4	16.1	-19.8	+133.6	.435	↑8
	30		◇≠△	1		1		7	3	19	-25.7	59.6	+23.7	-134.5	.511	
	p		*S*					*5*	-	*9*	*-25.2*	*61.6*	*+25.7*	*-131.4*	*.526*	
	f		*N*	*1*		*1*		*2*	*3*	*10*	*-26.3*	*57.8*	*+21.9*	*-137.3*	*.497*	
	1	S						2	-	5	-24.4	63.3	+27.4	-128.6	.539	
	2	N'						2	-	2	-24.2	60.7	+24.8	-130.8	.508	
	3	S						3	-	4	-26.1	59.5	+23.6	-134.9	.510	↑5
	4	N		1		1			3	8	-26.8	57.1	+21.2	-138.9	.494	
Apr 17	*2*	*30*		*4*	*1*	*3*		*24*	*36*	*256*	{*-5.4*}	{ *35.9*}		{*-25.9*}	*68*	*484*
107.291	29		▽-Ж	4	1	1	1	15	35	200	-20.0	25.0	+ 0.9	-173.6	.261	
D /0700/	*p*		*S*	*4*	*1*	*1*		*7*	*34*	*185*	*-19.6*	*25.9*	*+ 1.8*	*-170.9*	*.253*	
	f		*N*				*1*	*8*	*1*	*15*	*-23.8*	*13.9*	*-10.2*	*+153.3*	*.358*	
	1_3	S						1	-	1	-19.9	30.6	+ 6.5	-157.1	.275	
	1_4	S						1	-	4	-20.0	29.5	+ 5.5	-160.6	.270	
	1_6	S						1	-	1	-20.9	28.4	+ 4.3	-165.4	.279	
	1_{12}	S	3e	1q					24+	131	-19.6	27.0	+ 2.9	-168.9	.252	+19+3+2
		S						1	-	1	-18.6	25.7	+ 1.6	-173.4	.232	
	1_5	S						1	-	1	-18.8	25.1	+ 1.0	-176.1	.235	train
		S)						1	-	1	-19.1	24.0	- 0.1	+179.6	.239	
	3	S	1b		1a				10	43	-19.8	22.4	- 1.7	+173.5	.253	
	(3_0)	(S)						1	-	2	-18.9	19.1	- 5.0	+160.6	.250	
	4_1	N					1		1	4	-22.3	16.2	- 7.9	+156.5	.321	
		N						5	-	7	-22.9	13.8	-10.3	+151.7	.347	→22↑21
		N						3	-	4	-26.8	11.9	-12.2	+152.8	.416	↑5
	30		△≠△					7	-	12	-25.1	60.1	+36.0	-123.9	.642	
	p		*S*					*5*	-	*9*	*-24.8*	*61.0*	*+36.9*	*-122.9*	*.651*	
	f		*N*					*2*	-	*3*	*-26.0*	*57.3*	*+33.2*	*-126.7*	*.616*	
	1	S						2	-	5	-24.4	63.6	+39.5	-120.9	.677	
	(2)	(N)						1	-	1	-24.8	59.3	+35.2	-123.7	.631	
	3	S						3	-	4	-25.4	57.7	+33.6	-125.5	.618	
	4	N						1	-	2	-26.6	56.3	+32.2	-128.2	.609	
Apr 18	*2*	*28*		*4*	*1*	*1*	*1*	*22*	*35*	*212*	{*-5.3*}	{ *24.1*}		{*-25.9*}	*68*	*404*
108.300	29		△≠Ж	3	1	1		14	29	179	-20.0	25.2	+14.5	-136.5	.352	
D /0712/	*p*		*S*	*3*	*1*	*1*		*7*	*29*	*169*	*-19.8*	*25.7*	*+14.9*	*-135.2*	*.354*	
	f		*N*					*7*	-	*10*	*-22.3*	*18.2*	*+ 7.5*	*-158.4*	*.323*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_3	S'					1	-	1	-19.7	30.9	+20.1	-128.2	.414	
		1_4	S'					1	-	1	-20.4	30.0	+19.3	-130.8	.410	
			S					1	-	1	-19.5	28.3	+17.5	-131.5	.380	
		1_6	S					1	-	1	-21.0	28.2	+17.4	-134.7	.394	
		1_{12}	S	1c	1r				20	127	-19.8	26.6	+15.8	-134.7	.363	
		1_5	S'					1	-	1	-18.3	25.3	+14.6	-133.7	.332	
			S)					1	-	1	-19.2	25.2	+14.5	-135.9	.340	
		(2_2)	N					3	-	4	-21.7	22.7	+11.9	-146.2	.345	→10
		3	S	2		1			9+	34	-20.0	22.2	+11.5	-144.0	.319	+7+2
		(3_0)	S					1	-	2	-19.8	18.4	+ 7.6	-153.7	.282	
		4_1	N					2	-	3	-23.2	16.0	+ 5.3	-164.7	.321	
			N					2	-	3	-22.1	14.4	+ 3.7	-168.5	.297	→7+9
	30 ↓		Δ Δ					2	-	7	-25.0	62.3	+51.6	-117.6	.803	
		p•1	*S*					*1*	-	*5*	*-24.9*	*63.4*	*+52.7*	*-117.1*	*.812*	
		f•(2)	*N*					*1*	-	*2*	*-25.4*	*59.7*	*+48.9*	*-118.7*	*.779*	
Apr 19		*2*	*27*	*3*	*1*	*1*		*16*	*29*	*186*	*{-5.2}*	*{ 10.8}*		*{-25.8}*	*54*	*343*
ROT N_o *1654*																
109.408	29		Δ≠Ж	2	1	1		3	29	166	-19.8	25.4	+29.3	-119.8	.533	
D /0947/		*p*	*S*	*2*	*1*	*1*			*29*	*158*	*-19.7*	*25.5*	*+29.4*	*-119.6*	*.534*	
		f	*N*					*3*	-	*8*	*-21.2*	*23.4*	*+27.2*	*-123.9*	*.515*	
		1_{12}	S	1c	1r				22	133	-19.7	26.1	+30.0	-119.1	.541	
		(2_3)	N'					1	-	1	-20.7	23.8	+27.6	-122.7	.517	
			N)					1	-	2	-21.5	23.8	+27.6	-124.0	.522	
		(2_2)	N					1	-	5	-21.2	23.1	+27.0	-124.1	.512	
		3	S	1c		1a			7	25	-19.8	22.5	+26.4	-122.1	.495	
Apr 20		*1*	*16*	*2*	*1*	*1*		*3*	*29*	*166*	*{-5.1}*	*{356.1}*		*{-25.7}*	*49*	*281*
110.552	29		Δ≠Ж	2	1	1	1	2	27	134	-19.6	25.5	+44.5	-112.7	.718	
D /1316/		*p*	*S*	*2*	*1*	*1*	*1*	*1*	*27*	*133*	*-19.6*	*25.6*	*+44.5*	*-112.6*	*.718*	
		f•(2₂)	*N*					*1*	-	*1*	*-21.1*	*23.7*	*+42.7*	*-115.3*	*.702*	
			S)					1	-	1	-18.1	27.0	+46.0	-110.2	.730	
		1_7	S				1		1	2	-18.5	26.1	+45.1	-111.0	.721	
		1_{12}	S	1c	1p				21	119	-19.6	25.8	+44.8	-112.6	.721	
		3	S	1		1			5	11	-19.7	22.7	+41.6	-113.7	.685	
	31 ↑		∇-Δ				1	3	1	8	-22.4	12.2	+31.1	-123.0	.572	*
		p•1_1	*S'*					*1*	-	*1*	*-22.3*	*14.2*	*+33.2*	*-121.4*	*.596*	
		f	*N*				*1*	*2*	*1*	*7*	*-22.4*	*11.9*	*+30.8*	*-123.2*	*.569*	
			N					2	-	3	-22.7	12.6	+31.6	-123.1	.580	
		2_1	N				1		1	4	-22.2	11.3	+30.2	-123.3	.560	
Apr 21		*2*	*24*	*2*	*1*	*1*	*2*	*5*	*28*	*142*	*{-5.0}*	*{341.0}*		*{-25.5}*	*39*	*200*
111.458	29	*p*	Ж *S*	2	1	1	2	2	27	155	-19.5	25.0	+56.0	-110.2	.834	
D /1059/			S				1		1	6	-18.8	28.4	+59.3	-108.9	.862	
			S)					1	-	3	-18.5	26.1	+57.0	-108.9	.843	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_7	S				1		1	6	-18.5	25.3	+56.2	-108.9	.835	
		1_{12}	S	1c	1a*				22	128	-19.6	25.1	+56.1	-110.3	.835	
		3	S	1b		1			3	10	-19.7	22.4	+53.3	-110.9	.811	
			(S)					1	-	2	-20.4	20.1	+51.1	-112.1	.789	
	31		Δ-◊	1		1		3	2	11	-21.7	13.9	+44.8	-115.4	.728	
		p•1_1	*S'*	*1*		*1*			*2*	*6*	*-21.4*	*15.0*	*+45.9*	*-114.7*	*.739*	
		f	*N*					*3*	-	*5*	*-22.1*	*12.6*	*+43.5*	*-116.3*	*.714*	
			N)					2	-	3	-22.1	13.4	+44.3	-116.1	.723	→9
		2_1	N'					1	-	2	-22.0	11.3	+42.3	-116.7	.700	
Apr 22		*2*	*24*	*3*	*1*	*2*	*2*	*5*	*29*	*166*	*{-5.0}*	*{329.1}*		*{-25.4}*	*33*	*186*
112.526	29	*p*	¤ *S*	1	1			1	22	115	-19.7	24.6	+69.6	-109.2	.936	
D /1238/		1_{12}	S	1c	1a*				22	108	-19.7	24.7	+69.7	-109.2	.937	
		3	S					1	-	7	-19.7	22.4	+67.4	-109.4	.923	
	31		◊-Δ	1		1		11	3	28	-21.8	13.9	+59.0	-112.5	.856	
		p	*S*					*6*	-	*12*	*-21.3*	*16.1*	*+61.2*	*-111.7*	*.865*	
		f	*N*	*1*		*1*		*5*	*3*	*16*	*-22.2*	*12.2*	*+57.3*	*-113.2*	*.850*	
		1_1	S					3	-	9	-21.4	16.6	+61.7	-111.7	.884	
		1_2	S					3	-	3	-21.0	14.5	+59.6	-111.5	.807	→8
			N)					2	-	2	-23.2	14.0	+59.1	-114.1	.866	→6
			N)					1	-	1	-22.5	12.4	+57.4	-113.6	.851	
		2_2	N	1b		1			3	8	-22.0	12.2	+57.3	-113.0	.850	
		2_1	N					2	-	5	-21.9	11.4	+56.5	-113.0	.842	
Apr 23		*2*	*22*	*2*	*1*	*1*		*12*	*25*	*143*	*{-4.9}*	*{315.0}*		*{-25.3}*	*19*	*110*
113.261	29→	*p•1_{12}*	¤ *S*	1c	1q				17	111	-19.6	24.9	+79.7	-109.1	.981	
D /0616/																
	31→		∇ Δ				1	3	1	14	-22.2	12.8	+67.5	-112.0	.925	
		p•1_2	*S'*					*1*	-	*3*	*-21.0*	*15.8*	*+70.6*	*-110.6*	*.942*	
		f	*N*				*1*	*2*	*1*	*11*	*-22.5*	*11.9*	*+66.6*	*-112.4*	*.920*	
			N)					1	-	3	-23.2	12.1	+66.8	-113.2	.921	
		2_2	N'				1		1	5	-22.4	12.0	+66.7	-112.3	.920	
		2_1	N'					1	-	3	-22.0	11.7	+66.4	-111.9	.918	
Apr 24		*2*	*21*	*1*	*1*		*1*	*3*	*18*	*125*	*{-4.8}*	*{305.2}*		*{-25.2}*	*7*	*54*
114.498									N O	S U N S P O T S		A T	A L L			
D /1157/																
Apr.25																
115.444	32→	*p•1*	¤ *S*	1c	1r				18	107	-21.5	199.9	-76.5	+111.0	.970	
D /1039/																
Apr 26		*1*	*11*	*1*	*1*				*18*	*107*	*{-4.6}*	*{276.4}*		*{-24.9}*	*9*	*52*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
116.230	32	*p*	◊ *S*	2		2		1	15	107	-21.5	199.7	-66.3	+111.5	.918	
D /0532/		1	S	1c		1q			12	98	-21.5	199.8	-66.2	+111.5	.917	
		1_2	S	1		1			3	8	-21.1	198.8	-67.2	+111.2	.923	
		1_1	S					1	-	1	-21.2	198.4	-67.6	+111.1	.925	
Apr 27		*1*	*12*	*2*		*2*		*1*	*15*	*107*	*{-4.5}*	*{266.0}*		*{-24.8}*	*12*	*85*
117.439	32	*p*	◊ *S*	1		1	1	3	13	67	-21.3	199.1	-50.9	+113.7	.791	
D /1033/		1	S	1b		1a		1×	12	55	-21.2	199.4	-50.6	+113.6	.788	×3←
		1_2	S				1		1	7	-21.2	198.4	-51.6	+113.4	.799	
		1_1	S					1	-	2	-21.7	198.0	-52.0	+113.9	.803	
			(S)					1	-	3	-22.8	196.9	-53.1	+115.0	.816	
Apr 28		*1*	*12*	*1*		*1*	*1*	*3*	*13*	*67*	*{-4.4}*	*{250.0}*		*{-24.6}*	*16*	*82*
118.657	32	*p*	◊ *S*	4		1	1	2	13	59	-20.8	199.0	-34.9	+119.1	.614	
D /1547/			(S)					1	-	2	-20.3	202.7	-31.3	+120.5	.567	
			(S)					1	-	1	-20.3	201.1	-32.9	+119.4	.586	
		1	S	4t+		1a			12	49	-20.8	198.9	-35.0	+119.0	.615	+→8
		1_2	S				1		1	7	-21.1	198.0	-35.9	+119.0	.627	
Apr 29		*1*	*12*	*4*		*1*	*1*	*2*	*13*	*59*	*{-4.3}*	*{233.9}*		*{-24.4}*	*20*	*93*
119.253	32	*p*	◊ *S*	4		2	1	1	12	50	-20.7	199.0	-27.1	+124.4	.518	
D /0604/		1	S	3t+		1			9	39	-20.7	199.2	-26.9	+124.5	.515	+→7
			S	1		1			2	6	-20.7	198.6	-27.5	+124.0	.523	
			S					1	-	2	-20.9	198.1	-28.0	+123.9	.530	
		1_2	S				1		1	3	-21.1	198.0	-28.1	+124.2	.533	
Apr 30		*1*	*12*	*4*		*2*	*1*	*1*	*12*	*50*	*{-4.2}*	*{226.1}*		*{-24.3}*	*21*	*86*
120.259	32	*p*	▽ *S*				2	8	2	17	-21.3	198.8	-13.9	+142.9	.374	
D /0614/			(S)					1	-	2	-22.3	200.0	-12.7	+146.9	.375	
		1	S				2	4×	2	12	-20.9	198.9	-13.8	+142.5	.368	→9xyx×6
			(S)					1	-	1	-22.6	198.8	-14.0	+144.9	.391	
		(1_2)	S'					1	-	1	-21.2	197.2	-15.5	+139.9	.389	
			S'					1	-	1	-22.2	196.8	-15.9	+141.0	.405	
	33	⊢*p*•1_1	(◊) *N*	(1)		(1)			(-)	(10)	(+31.1	132.4	-80.4)	+58.1	.995	
May 1		*2*	*21*	*1*		*1*	*2*	*8*	*2*	*27*	*{-4.1}*	*{212.8}*		*{-24.2}*	*4*	*34*
121.626	32	*p*	△ *S*					4	-	8	-21.3	197.5	+ 2.8	-171.4	.303	
D /1501/		1	S'					1	-	2	-20.2	198.2	+ 3.5	-168.3	.286	
		1_2	S'					3	-	6	-21.6	197.2	+ 2.5	-172.4	.308	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	33		Δ–◇	3		1	1	2	14	88	+32.0	130.9	-63.8	+53.9	.943	
		p	*N*	*3*		*1*	*1*		*14*	*84*	*+31.8*	*131.2*	*-63.5*	*+54.0*	*.941*	
		f	*S*					*2*	-	*4*	*+35.2*	*123.3*	*-71.5*	*+52.7*	*.977*	
		1	N	1b	1u				13	76	+31.8	131.7	-63.0	+53.9	.939	
		(3_{12})	N'				(1)		(1)	8	+32.2	126.7	-68.0	+54.8	.961	
		4_1	S'					(1)	-	(2)	+34.6	123.4	-71.3	+53.2	.976	
		4_2	S'					(1)	-	(2)	+35.7	123.1	-71.6	+52.1	.978	
May 2		*2*	*21*	*3*		*1*	*1*	*6*	*14*	*96*	*{-4.0}*	*{194.7}*		*{-23.9}*	*9*	*73*
122.265	32		Δ Δ					3	-	8	-22.5	196.1	+ 9.8	-153.8	.357	
D /0622/		*p•1₂*	*S*					*2×*	-	*5*	*-22.1*	*196.8*	*+10.6*	*-151.5*	*.357*	×4+1
		f•	*(N)*					*1*	-	*3*	*-23.1*	*194.8*	*+ 8.5*	*-157.5*	*.357*	
	33		◇≠◇ δ	6		4	2	2	33	214	+32.2	128.4	-57.9	+51.9	.912	
		p	*N*	*4*		*2*			*21*	*159*	*+31.7*	*129.6*	*-56.6*	*+52.0*	*.903*	
		f	*S*	*2*		*2*	*2*	*2*	*12*	*55*	*+33.8*	*124.7*	*-61.6*	*+51.4*	*.935*	
		1	N	3b		1q			13	83	+31.8	131.7	-54.5	+51.1	.892	
		2_1	S				1	$1^×$	1	9	+32.3	129.4	-56.9	+51.4	.908	$×_2$
		2_2	S'				1		1	4	+32.7	127.6	-58.7	+51.7	.918	
		3_{12}	N	1b		1			8	76	+31.5	127.4	-58.9	+53.0	.916	
		4_3	S	1		1			3	14	+34.3	124.5	-61.7	+51.1	.938	
		4_1	S	1		1			7	24	+34.1	122.9	-63.4	+51.7	.945	
		4_2	S					1	-	4	+35.3	122.3	-63.9	+50.7	.949	
May 3		*2*	*24*	*6*		*4*	*2*	*5*	*33*	*222*	*{-3.9}*	*{186.3}*		*{-23.8}*	*26*	*190*
123.278	32↓		Δ Δ					6	-	13	-22.0	196.5	+23.6	-130.6	.491	*
D /0640/		*p•1₂*	*S*					*4*	-	*10*	*-21.7*	*197.1*	*+24.2*	*-129.3*	*.495*	↑7
		f•	*(N)*					*2*	-	*3*	*-23.2*	*194.3*	*+21.4*	*-135.0*	*.477*	→7
	33		◇≠◇ δ	10		6	2	8	47	243	+32.3	128.2	-44.7	+46.0	.827	*
		p	*N*	*4*		*2*		*1*	*28*	*145*	*+31.9*	*130.3*	*-42.6*	*+45.3*	*.811*	
		f	*S*	*6*		*4*	*2*	*7*	*19*	*98*	*+33.0*	*125.1*	*-47.8*	*+47.0*	*.852*	
		1	N	2b		1p			14^+	78	+32.2	131.3	-41.6	+44.4	.805	+10+4
		2_1	S	1		1		$1^×$	3	13	+32.7	129.2	-43.7	+45.0	.823	$×_3$↑
		3_{12}	N	2b		1q		$1^×$	14	67	+31.5	129.1	-43.8	+46.4	.817	$×_3$→
		2_3	S	3		1			9	41	+32.0	126.1	-46.8	+47.7	.840	
		2_2	S'				1		1	10	+32.8	125.1	-47.8	+47.1	.851	
		4_3	S				1	$3^×$	1	13	+34.6	123.0	-49.9	+46.2	.873	→7↑6$×_8$
		4_1	S	2		2			5	16	+34.1	121.9	-50.9	+47.3	.877	
		4_2	S					3	-	5	+35.3	121.2	-51.7	+46.4	.886	↑7
		U 3_1	*N*	*1b*					*10*	-	*+31.6*	*129.2*	*-43.7*	*+46.2*	*.817*	
		U 3_2	*N*	*1*					*4*	-	*+31.3*	*128.8*	*-44.1*	*+46.8*	*.818*	
May 4		*2*	*26*	*10*		*6*	*2*	*14*	*47*	*256*	*{-3.8}*	*{172.9}*		*{-23.6}*	*53*	*295*
124.406	33		▽–◇	6		2	3	13	19	123	+32.4	128.9	-28.9	+35.0	.714	
G /0944/		*p*	*N*	*6*		*2*		*6*	*16*	*97*	*+32.0*	*130.4*	*-27.6*	*+34.2*	*.701*	
		f	*S*				*3*	*7*	*3*	*26*	*+33.8*	*123.6*	*-33.8*	*+38.0*	*.763*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1	N	4+		1			11	59	+32.2	131.1	-26.9	+33.4	.697	+→5
		3_1	N	2		1			5	26	+32.0	129.5	-28.4	+34.9	.707	
		3_{21}	N					3	-	8	+31.3	129.0	-29.0	+36.1	.704	→6
		3_{22}	N					3	-	4	+31.0	128.3	-29.6	+37.1	.705	†7
		2_1	S					3	-	4	+32.7	128.3	-29.7	+35.4	.721	→10†6
		2_3	S'				1		1	7	+32.5	124.4	-33.5	+38.7	.747	
		2_2	S'					1	-	2	+33.6	124.1	-33.9	+37.9	.758	
		4_3	S					1	-	2	+35.2	122.1	-35.9	+37.8	.784	
		4_1	S				2		2	8	+34.9	121.6	-34.4	+38.5	.785	
		4_2	S					1	-	1	+35.5	121.3	-36.7	+38.1	.791	
			S)					1	-	2	+34.5	121.0	-37.0	+39.2	.787	
May 5		*1*	*13*	*6*		*2*	*3*	*13*	*19*	*123*	*{-3.7}*	*{158.0}*		*{-23.4}*	*27*	*172*
125.326	33		Δ ◊	4		2		9	15	102	+32.3	130.3	-15.5	+21.0	.630	
D /0749/		*p*	*N*	*4*		*2*		*6*	*15*	*96*	*+32.1*	*130.9*	*-14.9*	*+20.6*	*.623*	
		f	*S*					*3*	-	*6*	*+36.5*	*120.5*	*-25.3*	*+28.2*	*.729*	
			(N)					1	-	1	+32.3	133.0	-12.8	+17.7	.616	
		1	N	3b		1p			13+	77	+32.1	131.2	-14.6	+20.2	.622	+7+4+2
		3_1	N	1		1		1×	2	12	+32.2	129.8	-16.0	+21.8	.630	$\times_2$→
		3_{21}	N					2	-	4	+31.8	128.8	-17.0	+23.3	.631	
		3_{22}	N					1	-	1	+30.0	128.4	-17.4	+25.2	.611	
			N					1	-	1	+32.2	127.4	-18.4	+24.6	.643	
		(4_2)	S					1	-	1	+37.2	120.9	-24.9	+27.3	.732	
		4_{31}	S					2	-	5	+36.4	120.4	-25.4	+28.4	.728	†8
May 6		*1*	*13*	*4*		*2*		*9*	*15*	*102*	*{-3.6}*	*{145.8}*		*{-23.2}*	*23*	*158*
126.588	33	*p*	◊ *N*	2		2		5	17	85	+31.4	130.7	+ 1.6	-2.5	.574	
G /1407/		1	N	1b		1a			14	71	+31.4	131.0	+ 1.9	-2.9	.575	
		3_1	N	1		1			3	8	+31.8	130.2	+ 1.1	-1.6	.579	
		3_{21}	N					1	-	2	+31.9	129.1	0.0	0.0	.580	
		3_{22}	N					1	-	1	+29.7	128.0	- 1.1	+1.7	.549	
			N)					3	-	3	+29.5	127.4	- 1.8	+2.8	.542	†9
May 7		*1*	*13*	*2*		*2*		*5*	*17*	*85*	*{-3.5}*	*{129.1}*		*{-22.9}*	*28*	*139*
127.639	33	*p*	◊ *N*	2		2		2	17	70	+31.2	130.7	+15.5	-21.9	.613	
G /1520/		1	N	1c		1a			14	63	+31.3	130.9	+15.7	-22.2	.615	
		3_1	N	1		1			3	3	+31.5	130.3	+15.1	-21.3	.613	
		3_{22}	N					1	-	1	+29.4	128.0	+12.8	-19.7	.575	
			N					1	-	3	+30.4	126.9	+11.7	-17.5	.583	
	34	†*p*•1_o	Δ *S'*					1	-	5	-24.1	64.8	-50.4	+117.9	.799	
May 8		*2*	*22*	*2*		*2*		*3*	*17*	*75*	*{-3.4}*	*{115.2}*		*{-22.6}*	*27*	*117*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
128.375	33	*p*	◊ *N*	2		2		2	16	78	+31.3	130.9	+25.4	-33.1	.674	
D /0900/		1	N	1b		1a			14	73	+31.3	131.0	+25.5	-33.2	.675	
		3	N	1		1			2	3	+31.4	130.4	+25.0	-32.5	.672	
			N					2	-	2	+30.7	127.1	+21.7	-29.8	.642	→5↓5
	34	*p*↓1$_o$	Δ *S*					2	-	6	-24.0	65.6	-39.9	+122.1	.693	
	35	→*p*•1	*S*	1		1			15	60	-21.1	22.5	-83.0	+110.8	.992	
May 9		*3*	*33*	*3*		*3*		*4*	*31*	*144*	*{-3.3}*	*{105.5}*		*{-22.5}*	*28*	*139*
129.494	33	*p*	¤ *N*	3	1			2	17	115	+31.6	130.9	+40.2	-44.5	.787	
G /1151/		1	N	3b	1a				17+	113	+31.6	131.0	+40.3	-44.5	.787	+9+2+6
			N					1	-	1	+31.4	129.5	+38.8	-43.9	.774	
			N)					1	-	1	+31.6	126.2	+35.5	-41.4	.751	
	34	*p*•1$_1$	Δ *S'*					1	-	4	-23.3	65.4	-25.3	+131.6	.528	
	35	*p*	¤ *S*	2	1	1			31	114	-21.1	19.1	-71.6	+111.3	.950	*
		1	S	1c		1q			14	55	-21.0	21.5	-69.2	+111.3	.938	
		3	S	1c	1q				17	59	-21.2	16.8	-73.9	+111.1	.962	
	36	↑	◊ ◊	2		2	1	2	19	34	+20.6	127.0	+36.3	-54.6	.682	
		p	*N*	*1*		*1*	*1*		*7*	*13*	*+20.4*	*128.7*	*+38.0*	*-56.0*	*.698*	
		f	*S*	*1*		*1*		*2*	*12*	*21*	*+20.7*	*126.0*	*+35.3*	*-53.7*	*.672*	
		1	N	1b		1			6	9	+20.6	128.8	+38.1	-55.8	.700	
		3	N				1		1	4	+19.9	128.5	+37.8	-56.5	.694	
			S)					1	-	4	+20.1	126.4	+35.7	-55.0	.672	
		2	S	1		1		1×	12	17	+20.9	125.9	+35.2	-53.4	.672	×$_2$
May 10		*4*	*45*	*7*	*2*	*3*	*1*	*5*	*67*	*267*	*{-3.2}*	*{ 90.7}*		*{-22.2}*	*68*	*269*
130.619	33	*p*	¤ *N*	1	1			1	17	99	+31.5	130.6	+54.8	-51.9	.888	
G /1451/		1	N	1b	1q				17	97	+31.5	130.7	+54.9	-51.9	.889	
			N)					1	-	2	+31.3	126.9	+51.1	-50.5	.863	
	34		∇-Δ				1	2	1	8	-24.0	63.7	-12.1	+152.0	.409	
		p•1$_1$	*S'*					*1*	-	*1*	*-23.7*	*66.4*	*- 9.5*	*+157.1*	*.386*	
		f	*N*				*1*	*1*	*1*	*7*	*-24.1*	*63.3*	*-12.5*	*+151.3*	*.413*	
		2$_2$	N'					1	-	1	-23.8	63.9	-11.9	+152.0	.404	
		2$_1$	N'				1		1	6	-24.1	63.2	-12.6	+151.2	.414	
	35	*p*	◊ *S*	3		2			27	113	-21.0	19.2	-56.6	+113.0	.848	
		1	S	1b		1p			14	61	-21.0	21.2	-54.6	+113.4	.831	
		3	S	2b		1q			13+	52	-21.0	16.8	-59.0	+112.6	.868	+11+2
	36		◊ Δ	3		1		4	12	35	+20.4	126.2	+50.4	-62.3	.818	
		p	*N*					*2*	-	*4*	*+20.4*	*129.7*	*+53.9*	*-63.5*	*.848*	
		f	*S*	*3*		*1*		*2*	*12*	*31*	*+20.4*	*125.8*	*+50.0*	*-62.2*	*.814*	
		1	N					1	-	3	+20.5	129.8	+54.0	-63.4	.849	
		3	N					1	-	1	+20.2	129.2	+53.4	-63.6	.843	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
			S					1	-	1	+19.9	126.5	+50.7	-62.9	.819	train
			S					1	-	3	+20.1	126.1	+50.3	-62.5	.816	
		2	S	3t	1				12	27	+20.4	125.7	+49.9	-62.1	.814	
May 11		*4*	*45*	*7*	*1*	*3*	*1*	*7*	*57*	*255*	*{-3.0}*	*{ 75.8}*		*{-21.9}*	*60*	*265*
131.333	33	*p*•1	ꟾ	*N*	lb	la			17	105	+31.5	130.8	+64.4	-54.9	.942	
G /0800/	34		∇-∇				5	5	5	32	-24.2	64.8	- 1.6	+176.0	.365	
		p		*S*			*3*	*2*	*3*	*14*	*-24.2*	*66.2*	*- 0.1*	*+179.7*	*.364*	
		f		*N*			*2*	*3*	*2*	*18*	*-24.1*	*63.6*	*- 2.8*	*+173.1*	*.366*	
		1_1	S					1	-	3	-23.8	67.1	+ 0.7	-178.2	.358	
		1_2	S				2	1	2	7	-24.1	66.5	+ 0.2	-179.6	.362	→yxy
		1_3	S				1		1	4	-24.6	65.1	- 1.3	+176.9	.371	
		2_3	N					1	-	1	-24.7	63.9	- 2.4	+174.1	.374	
		2_{12}	N				2	2×	2	17	-24.1	63.6	- 2.8	+173.0	.365	→5yxy×9
	35	*p*	◇	*S*	3		2		27	102	-21.1	19.2	-47.2	+115.5	.761	
		1	S		lc		la		15	58	-21.1	20.9	-45.4	+116.1	.743	
		3	S		2b		1q		12+	44	-21.1	16.9	-49.5	+114.8	.784	+10+2
	36		◇	Δ	1		1	1	7	18	+20.3	125.5	+59.2	-65.2	.889	
		p•1		*N*				*1*	-	*1*	*+19.7*	*129.7*	*+63.4*	*-67.0*	*.916*	
		f•2		*S*	*1b*		*1*		*7*	*17*	*+20.3*	*125.3*	*+58.9*	*-65.1*	*.887*	
May 12		*4*	*46*		*5*	*1*	*3*	*5*	*6*	*56*	*257*	*{-2.9}*	*{ 66.4}*		*{-21.7}*	*62*	*279*
132.421	33→	*p*•1	ꟾ	*N*	lc	lr			16	87	+31.5	130.2	+78.2	-57.6	.990	
G /1006/	34↓		∇	Δ			1	3	1	9	-24.3	64.7	+12.7	-151.5	.421	
		p↓1_{1-3}		*S*				*2*	-	*4*	*-24.5*	*66.4*	*+14.4*	*-148.6*	*.436*	
		f		*N*			*1*	*1*	*1*	*5*	*-24.2*	*63.4*	*+11.4*	*-153.8*	*.409*	
		2_3	N					1	-	2	-24.5	63.6	+11.6	-153.7	.416	
		2_{12}	N				1		1	3	-24.0	63.2	+11.2	-153.9	.405	
	35	*p*	◇	*S*	2		2		18	82	-21.0	19.2	-32.8	+122.3	.600	
		1	S		lc		lr		11	53	-21.0	20.4	-31.5	+123.1	.585	
		3	S		lc		lp		7	29	-20.9	16.9	-35.1	+120.8	.627	
	36→	*f*•2	Δ	*S*				1	-	2	+20.5	124.9	+72.9	-67.9	.967	
May 13		*4*	*43*		*3*	*1*	*2*	*1*	*4*	*35*	*180*	*{-2.8}*	*{ 52.0}*		*{-21.5}*	*35*	*173*
133.464	35	*p*	◇	*S*	3		2		3	17	64	-20.8	19.2	-19.0	+136.0	.439
G /1108/		1	S		1b		1a			11	47	-20.9	20.3	-17.9	+137.5	.428
		3	S		2		1			6	13	-20.8	16.9	-21.3	+132.7	.464
			(S)					3		-	4	-20.4	14.2	-24.0	+129.0	.492 →6↑6
	37↑	*p*	◇	*N*	1		1	2		2	16	+31.3	19.9	-18.3	+25.7	.620
			N					2		-	4	+30.2	21.7	-16.4	+24.3	.596 ↑5
		1	N		1		1			2	12	+31.6	19.3	-18.9	+26.2	.628

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	38 ↑		Δ ◇	1		1		3	3	13	-21.3	5.1	-33.1	+122.7	.607	
		p•1	S	1		1			3	9	-21.4	5.7	-32.5	+123.3	.600	
		f◆2	N					3	-	4	-21.2	3.6	-34.6	+121.5	.624	↑5
May 14		3	33	5		4		8	22	93	{-2.7}	{ 38.2}		{-21.2}	38	161
134.290	35		Δ ◇	1		1		3	13	42	-21.3	18.8	- 8.4	+157.6	.352	
G /0658/		p	S	1		1		1	13	37	-21.0	20.0	- 7.2	+159.6	.338	
		f◆2	N					2	-	5	-23.7	9.9	-17.4	+142.9	.455	
		1	S	1b		1a			13	35	-21.0	20.2	- 7.0	+160.1	.337	
		3	S					1	-	2	-20.5	16.9	-10.3	+151.3	.352	
	37 ↓ p◆		▽ N				1	1×	1	7	+31.5	18.6	- 8.7	+12.9	.577	$\times_2 \rightarrow 5$
	38		Δ ◇	1		1		2	7	12	-21.5	7.0	-20.3	+135.3	.461	
		p	S	1		1		1	7	11	-21.6	7.2	-20.0	+135.8	.459	
		f•2	N					1	-	1	-20.5	4.2	-23.0	+130.2	.482	
		1	S	1		1			7	9	-21.6	7.4	-19.8	+136.1	.457	
			S)					1	-	2	-21.5	6.4	-20.9	+134.5	.467	
May 15		3	32	2		2	1	6	21	61	{-2.6}	{ 27.3}		{-21.0}	39	111
135.536	35		▽≠◇	3		3	1	9	11	52	-20.0	17.0	+ 6.2	-161.6	.322	
G /1251/		p	S	3		3		2	10	36	-20.2	17.7	+ 6.9	-160.2	.327	
		f	N				1	7	1	16	-19.6	15.4	+ 4.6	-164.9	.310	
		8	(N)					1	-	1	-20.4	21.8	+11.0	-149.8	.358	
		1	S	1		1			5	15	-20.9	20.1	+ 9.3	-154.6	.352	
		6_2	N					2	-	3	-18.0	16.9	+ 6.1	-159.4	.287	
		5_1	S	1		1			3	10	-20.0	16.2	+ 5.4	-163.5	.315	
		6_1	N				1	2×	1	9	-18.5	16.2	+ 5.4	-162.2	.291	↑7yxx$^{\times}{}_6$
		5_2	S	1		1			2	5	-18.9	15.8	+ 5.0	-163.7	.296	
		5_3	S					2	-	6	-20.0	15.5	+ 4.8	-165.5	.312	
		2	N					2	-	3	-24.2	9.4	- 1.3	+176.7	.373	
	38		Δ Δ					3	-	8	-21.4	7.0	- 3.9	+169.1	.334	
		p◆1	S					2	-	6	-21.7	8.4	- 2.4	+173.3	.333	
		f•	N)					1	-	2	-20.4	2.6	- 8.2	+156.4	.337	
May 16		2	22	3		3	1	12	11	60	{-2.5}	{ 10.8}		{-20.6}	21	113
ROT No *1655*																
136.475	35		◇≠▽	2		1	1	9	8	47	-19.7	16.2	+17.9	-136.1	.419	
G /1124/		p	S				1	8	1	15	-20.5	16.7	+18.3	-136.8	.432	
		f	N	2		1		1	7	32	-19.3	16.0	+17.6	-135.8	.413	
		1	S					3	-	3	-21.0	19.7	+21.4	-133.4	.470	
		6_{12}	N	2		1			7+	29	-18.8	16.7	+18.3	-133.8	.413	+4+2+
			(S)					2	-	4	-21.1	16.5	+18.2	-138.1	.437	
		5_1	S					1	-	3	-19.9	16.2	+17.9	-136.5	.421	
		5_{23}	S				1	2×	1	5	-20.0	15.3	+16.9	-138.1	.411	→12yxx$^{\times}{}_3$
		2	N					1	-	3	-24.3	9.4	+11.1	-155.0	.415	
	38 ↓ f◆		Δ N					2	-	6	-22.1	5.3	+ 6.9	-161.8	.358	
May 17		2	22	2		1	1	11	8	53	{-2.4}	{358.4}		{-20.3}	15	97

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
137.433	35		◇≠△	1		1	1	4	3	20	-20.2	20.0	+34.3	-120.7	.617	
G /1024/		*p*	*S*					*4*	–	*9*	*-21.2*	*20.7*	*+35.0*	*-121.7*	*.631*	
		f	*N*	*1*		*1*	*1*		*3*	*11*	*-19.4*	*19.4*	*+33.7*	*-119.9*	*.605*	
			S					2	–	4	-22.5	23.1	+37.4	-122.2	.666	
		(8)	N				1		1	4	-21.0	21.8	+36.1	-120.8	.643	
		1	S					1	–	3	-20.9	19.6	+33.9	-122.0	.617	
		6_{12}	N	1		1			2	7	-18.5	18.0	+32.3	-119.4	.584	
			S					1	–	2	-18.9	17.7	+32.0	-120.2	.582	
May 18		*1*	*11*	*1*		*1*	*1*	*4*	*3*	*20*	*{-2.3}*	*{345.7}*		*{-20.1}*	*5*	*31*
138.473	35↓	*f*•2	△	*N*				2	–	6	-24.7	9.5	+37.6	-125.1	.681	
G /1122/																
May 19		*1*	*10*					*2*	–	*6*	*{-2.1}*	*{331.9}*		*{-19.8}*	*0*	*9*
139.480	39 ↑		◇ ◇	2		2	2	4	6	22	-26.8	331.8	+13.2	-154.2	.469	
G /1132/		*p*	*S*	*1*		*1*	*2*		*4*	*12*	*-27.1*	*332.9*	*+14.3*	*-152.7*	*.480*	
		f	*N*	*1*		*1*		*4*	*2*	*10*	*-26.5*	*330.5*	*+11.9*	*-156.1*	*.456*	
			S				1		1	3	-26.7	333.7	+15.1	-150.9	.481	
		1_1	S				1		1	3	-27.3	333.0	+14.4	-152.7	.484	
		1_2	S	1		1			2	6	-27.1	332.4	+13.8	-153.6	.478	
		2_2	N					1	–	2	-26.2	331.1	+12.5	-154.6	.455	
		2_1	N	1		1		2×	2	7	-26.6	330.5	+11.9	-156.2	.458	×3
			N)					1	–	1	-26.2	329.1	+10.5	-158.3	.443	
May 20		*1*	*11*	*2*		*2*	*2*	*4*	*6*	*22*	*{-2.0}*	*{318.6}*		*{-19.4}*	*11*	*39*
140.574	39	*f*•2_{12}	▽	*N'*			1	1	1	7	-26.1	330.4	+26.3	-136.2	.576	
G /1346/																
	40 ↑		△ ▽				2	1	2	14	+35.0	3.1	+58.9	-50.1	.916	
		p	*N*				*2*		*2*	*11*	*+34.7*	*3.6*	*+59.4*	*-50.6*	*.918*	
		f•2	*S'*					*1*	–	*3*	*+35.9*	*1.3*	*+57.1*	*-48.6*	*.909*	
		1	N)				1		1	6	+34.8	4.4	+60.2	-50.7	.923	
			N)				1		1	5	+34.6	2.6	+58.5	-50.4	.913	
May 21		*2*	*20*				*3*	*2*	*3*	*21*	*{-1.9}*	*{304.1}*		*{-19.1}*	*3*	*23*
141.268	39		△ △					3	–	8	-27.0	331.5	+36.6	-129.1	.686	
G /0627/		*p*	*S*					*2*	–	*5*	*-27.5*	*332.1*	*+37.1*	*-129.4*	*.695*	
		f•2_{12}	*N*					*1*	–	*3*	*-26.2*	*330.5*	*+35.6*	*-128.7*	*.671*	
		1_1	S					1	–	2	-27.2	332.7	+37.8	-128.6	.699	
		1_2	S'					1	–	3	-27.7	331.7	+36.7	-129.9	.692	
	40		△ △					2	–	5	+35.3	1.8	+66.9	-51.9	.954	
		p•1	*N)*					*1*	–	*(1)*	*+35.6*	*5.6*	*+70.7*	*-52.4*	*.969*	
		f•2	*S*					*1*	–	*(4)*	*+35.2*	*0.8*	*+65.9*	*-51.8*	*.950*	
May 22		*2*	*20*					*5*	–	*13*	*{-1.8}*	*{295.0}*		*{-18.9}*	*0*	*15*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
142.422	39	f•2$_{12}$	Δ N				1		-	2	-26.2	330.2	+50.6	-121.5	.815	
G /1008/	40	f•2	Δ S				1		-	(1)	+35.3	359.8	+80.1	-54.1	.993	
May 23	*2*	*20*					*2*		*-*	*3*	*{-1.7}*	*{279.7}*		*{-18.5}*	*0*	*3*
143.444	NO SUNSPOT GROUPS LASTING FOR TWO OR MORE DAYS															
G /1039/																
May 24																
144.447	41	p•1	Δ N				2		-	5	+17.9	181.3	-71.6	+70.7	.958	
G /1044/																
May 25	*1*	*10*					*2*		*-*	*5*	*{-1.4}*	*{252.9}*		*{-17.8}*	*0*	*3*
145.665	41	◊ Δ		1		1	2		3	11	+18.0	178.5	-58.3	+68.4	.873	
D /1557/		p•1	N				*2*		-	*2*	*+18.0*	*182.4*	*-54.4*	*+67.5*	*.840*	
		f•2	S	1		1			*3*	*9*	*+18.0*	*177.6*	*-59.2*	*+68.6*	*.880*	
May 26	*1*	*10*		*1*		*1*	*2*		*3*	*11*	*{-1.3}*	*{236.8}*		*{-17.4}*	*3*	*11*
146.288	41	Δ Δ					2		-	4	+18.2	180.5	-48.0	+65.3	.779	
G /0655/		p•1	N				*1*		-	*2*	*+18.3*	*183.6*	*-44.9*	*+63.9*	*.748*	
		f•2	S				*1*		-	*2*	*+18.0*	*177.4*	*-51.1*	*+66.6*	*.809*	
May 27	*1*	*10*					*2*		*-*	*4*	*{-1.2}*	*{228.5}*		*{-17.2}*	*0*	*5*
147.600	42	Δ ∇				1	3		1	7	+21.1	208.5	- 2.7	+6.5	.380	*
G /1423/		p•1$_1$	N			*1*	*1*	×	*1*	*5*	*+21.0*	*209.1*	*- 2.1*	*+5.2*	*.378*	*×+6*
		f•2$_1$	S				*2*		*-*	*2*	*+21.2*	*207.1*	*- 4.1*	*+9.9*	*.386*	
	43	◊ Δ		1		1	1		3	11	-21.8	198.7	-12.5	+150.5	.409	*
		p•(1)	S				*1*		*-*	*2*	*-21.6*	*201.0*	*-10.2*	*+154.8*	*.389*	
		f•2	N	*1*		*1*			*3*	*9*	*-21.8*	*198.2*	*-13.0*	*+149.6*	*.414*	
May 28	*2*	*21*		*1*		*1*	*1*	*4*	*4*	*18*	*{-1.1}*	*{211.2}*		*{-16.7}*	*5*	*33*
148.416	42	∇-∇				6	4		9	43	+21.0	209.7	+ 9.4	-22.0	.406	
G /0959/		*p*	*N*			*5*	*1*		*8*	*33*	*+21.0*	*210.5*	*+10.2*	*-23.7*	*.410*	
		f	*S*			*1*	*3*		*1*	*10*	*+21.0*	*207.2*	*+ 6.8*	*-16.5*	*.391*	
		1$_3$	N			2			4	18	+21.4	210.9	+10.6	-24.1	.419	
		1$_1$	N			2			2	5	+19.6	210.2	+ 9.8	-24.7	.386	
		1$_2$	N			1			2	8	+21.0	210.1	+ 9.7	-22.9	.407	
			N				1		-	2	+20.9	209.3	+ 9.0	-21.4	.400	
		2$_0$	S				1		-	2	+22.7	207.7	+ 7.4	-16.4	.420	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_2	S				1		1	5	+20.0	207.1	+ 6.7	-17.1	.377	
		2_1	S					2	-	3	+21.4	206.9	+ 6.5	-15.5	.396	
	43	*f*•2	Δ *N*					1	-	1	-22.0	198.7	- 1.7	+175.7	.362	
May 29		*2*	*22*				*6*	*5*	*9*	*44*	*{-1.0}*	*{200.4}*		*{-16.5}*	*16*	*80*
149.610	42		◇+Ⅱ	8	1	5	7	16	52	154	+20.3	209.4	+24.8	-47.5	.536	
G /1438/		*p*	*N*	*5*	*1*	*2*	*4*	*7*	*36*	*95*	*+20.2*	*211.1*	*+26.6*	*-49.6*	*.553*	
		f	*S*	*3*		*3*	*3*	*9*	*16*	*59*	*+20.5*	*206.6*	*+22.0*	*-44.7*	*.508*	*
		1_4	N	1		1		1×	5	13	+21.4	212.2	+27.6	-48.8	.575	×←
			N)					1	-	2	+20.8	211.6	+27.1	-49.3	.563	
		1_3	N	3b	1n				21	55	+19.9	211.5	+26.9	-50.4	.555	
		1_2	N	1		1			6	8	+20.0	210.7	+26.2	-49.5	.547	
		1_1	N				2		2	4	+19.8	210.3	+25.7	-49.4	.540	
			N				1		1	3	+20.0	210.1	+25.6	-48.9	.540	
			N					2	-	2	+19.4	210.1	+25.5	-49.5	.535	
		2_5	S					3	-	5	+18.3	209.9	+25.4	-51.2	.523	→6
			N					1	-	2	+20.6	209.6	+25.0	-47.4	.539	
			N)					2	-	2	+19.4	209.1	+24.6	-48.7	.524	
			S)					1	-	2	+23.2	207.9	+23.3	-41.8	.547	
			S)					1	-	3	+19.4	207.7	+23.1	-47.0	.508	
		2_4	S				1		1	5	+18.5	207.7	+23.2	-48.5	.500	
		3	N				1		1	4	+21.2	207.4	+22.9	-44.1	.523	
		4	S)				1		1	3	+21.2	206.6	+22.1	-43.2	.514	×4
		2_3	S	1		1		2×	4	12	+19.5	206.2	+21.6	-45.1	.493	sxx→9+8
		2_0	S				1	2×	1	11	+22.6	206.1	+21.5	-40.6	.523	×7
		2_2	S	1		1			5	10	+20.6	205.8	+21.3	-43.0	.500	
		2_1	S	1		1			4	8	+21.4	205.4	+20.8	-41.2	.504	
	/43/															INTERMITTENT
	44	⊢	▽-◇	2		1	1	4	13	61	+20.7	121.8	-62.8	+66.6	.908	
		p•1	*N*	*2b*		*1a*			*12*	*39*	*+20.8*	*123.0*	*-61.6*	*+66.3*	*.900*	
		f	*S*				*1*	*4*	*1*	*22*	*+20.5*	*119.6*	*-65.0*	*+67.2*	*.922*	
			(S)					3	-	8	+21.1	120.7	-63.9	+66.4	.916	→6+12
		2_2	S'					1	-	5	+20.0	119.7	-64.8	+67.8	.920	
		2_1	S				1		1	9	+20.3	118.5	-66.1	+67.6	.929	
May 30		*2*	*26*	*10*	*1*	*6*	*8*	*20*	*65*	*215*	*{-0.8}*	*{184.6}*		*{-16.0}*	*99*	*311*
150.497	42		◇+▣	8	1	6	3	11	76	353	+20.3	210.2	+37.3	-57.9	.673	
G /1156/		*p*	*N*	*4*	*1*	*2*		*2*	*49*	*231*	*+20.4*	*212.1*	*+39.3*	*-59.0*	*.695*	
		f	*S*	*4*		*4*	*3*	*9*	*27*	*122*	*+20.1*	*206.5*	*+33.7*	*-55.9*	*.632*	
		1_4	N	1		1			3	12	+21.7	213.0	+40.2	-57.7	.711	
		1_3	N	1b	1q				35	170	+20.3	212.4	+39.5	-59.2	.697	
			N)					1	-	3	+21.5	211.7	+38.8	-57.3	.696	
		1_{12}	N	2b		1			11	44	+20.2	211.2	+38.4	-58.8	.684	
		2_5	S				1	1×	1	6	+18.0	210.3	+37.4	-61.2	.663	×3
			S)					1	-	2	+19.1	209.2	+36.3	-59.0	.655	
			(S)					1	-	1	+22.4	208.8	+36.0	-54.3	.671	
		2_4	S	1		1			7+	53	+18.7	207.3	+34.5	-58.4	.632+	4+
		continued														

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		3	N'					1	-	2	+21.4	207.3	+34.5	-54.7	.648	
			S)					1	-	1	+19.6	206.3	+33.5	-56.4	.626	
		4	S)					1	-	2	+21.6	206.2	+33.3	-53.6	.637	
		2_o	S				2	1	2	16	+22.7	206.0	+33.1	-52.0	.643	↑5yxy
		2_3	S	1		1		2×	5	16	+20.4	205.2	+32.3	-54.5	.618	sxx→6↑6
		2_2	S	1		1			4	8	+21.1	204.9	+32.0	-53.3	.619	×4
		2_1	S	1		1		1×	8	17	+21.9	204.8	+32.0	-52.1	.626	×3→
	/43/															INTERMITTENT
	44		Δ–◇	1		1		6	7	45	+20.5	122.2	-50.7	+63.7	.810	
		p•1	*N*	*1*		*1*			*7*	*30*	*+20.5*	*123.2*	*-49.7*	*+63.4*	*.801*	
		f	*S*					*6*	-	*15*	*+20.5*	*120.1*	*-52.7*	*+64.3*	*.829*	
			S					3	-	8	+20.5	121.3	-51.5	+64.0	.818	→6↑5
		2_2	S)					1	-	2	+20.0	119.6	-53.2	+65.1	.832	
		2_1	S					2	-	5	+20.8	118.4	-54.4	+64.6	.844	
May 31		*2*	*31*	*9*	*1*	*7*	*3*	*17*	*83*	*398*	*{-0.7}*	*{172.8}*		*{-15.7}*	*121*	*574*
151.530	42		◇ ✖	6	1	2	2	7	64	329	+20.5	211.0	+51.8	-64.1	.819	
G /1243/		*p•1_{1-4}*	*N*	*2b*	*1q*				*47+*	*264*	*+20.3*	*212.5*	*+53.3*	*-64.8*	*.833*	*+44+3*
		f	*S*	*4*		*2*	*2*	*7*	*17*	*65*	*+21.3*	*204.7*	*+45.6*	*-61.1*	*.763*	
		2_4	S				1	2×	1	13	+19.4	205.7	+46.6	-63.7	.766	×7→9xxy
		2_o	S				1	2×	2	11	+22.8	205.5	+46.3	-59.5	.777	×5↑9xyx
		2_{23}	S	3		1		3×	9+	29	+20.9	204.2	+45.0	-61.4	.756	+5+2+2
		2_1	S	1		1			5	12	+22.8	204.2	+45.1	-58.8	.765	×↑
	43		▽ ◇	1		1	4	5	7	35	-22.6	201.5	+42.3	-121.3	.729	
		p	*S*	*1*		*1*	*2*	*1*	*5*	*20*	*-21.8*	*202.6*	*+43.4*	*-119.8*	*.737*	
		f	*N*				*2*	*4*	*2*	*15*	*-23.6*	*200.0*	*+40.8*	*-123.3*	*.719*	
		1	S				2		2	9	-22.0	203.5	+44.3	-119.6	.747	
		3	S	1		1		1×	3	11	-21.7	201.8	+42.6	-120.0	.729	×←
		4_2	N					1	-	3	-23.8	201.1	+41.9	-123.0	.731	
			N					1	-	1	-22.9	200.2	+41.1	-122.3	.718	
		4_1	N				2	2×	2	11	-23.6	199.7	+40.5	-123.5	.716	→5↑5 ×3
	44		Δ ◇	2		1		2	6	16	+20.5	122.5	-36.6	+57.2	.665	
		p•1	*N*	*2*		*1*			*6*	*14*	*+20.4*	*123.4*	*-35.7*	*+56.9*	*.655*	
		f	*S*					*2*	-	*2*	*+21.3*	*116.4*	*-42.8*	*+59.7*	*.736*	
		2_1	S'					1	-	1	+21.3	117.3	-41.9	+59.2	.726	
			S)					1	-	1	+21.3	115.5	-43.7	+60.1	.745	
June 1		*3*	*39*	*9*	*1*	*4*	*6*	*14*	*77*	*380*	*{-0.6}*	*{159.2}*		*{-15.3}*	*93*	*448*
152.305	42		◇ ✖	3	1	2		4	52	293	+20.6	211.4	+62.5	-66.8	.905	
G /0720/		*p•1_{1-4}*	*N*	*1c*	*1r*				*47*	*265*	*+20.5*	*212.2*	*+63.3*	*-67.1*	*.910*	
		f	*S*	*2*		*2*		*4*	*5*	*28*	*+21.6*	*204.2*	*+55.3*	*-64.0*	*.853*	
		2_4	S					2	-	2	+19.6	205.4	+56.5	-66.6	.858	→8
		2_o	S'					1	-	1	+22.5	205.1	+56.2	-63.3	.862	
		2_{23}	S	1		1			3	17	+21.2	204.1	+55.2	-64.5	.851	
		2_1	S	1		1		1×	2	8	+23.0	204.0	+55.1	-62.3	.854	×3

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	43		◇–◇	4		2	3	5	18	91	-22.5	201.9	+53.0	-117.1	.831	
		p	*S*	*2*		*1*	*1*	*1*	*8*	*48*	*-21.5*	*204.0*	*+55.1*	*-115.4*	*.846*	
		f	*N*	*2*		*1*	*2*	*4*	*10*	*43*	*-23.5*	*199.7*	*+50.8*	*-119.1*	*.814*	
		1	S	2		1			7	36	-21.6	204.4	+55.5	-115.4	.850	
			S)					1	-	3	-21.2	203.3	+54.4	-115.2	.840	
		3	S				1		1	9	-21.2	202.4	+53.5	-115.5	.833	
			N)					1	-	1	-22.9	202.0	+53.0	-117.6	.833	
		4_3	N)				1	1×	1	9	-23.4	201.3	+52.4	-118.4	.828	×3
		4_2	N				1		1	5	-23.9	200.7	+51.7	-119.1	.824	
			N)					2	-	3	-23.9	199.7	+50.8	-119.5	.815	→6
		4_1	N	2		1			8	25	-23.5	198.8	+49.9	-119.3	.806	
	44		△ ◇	3		1		3	11	30	+20.6	122.6	-26.3	+49.1	.550	
		p•1	*N*	*3d*		*1*			*11+*	*26*	*+20.5*	*123.5*	*-25.4*	*+48.5*	*.540*	*+5+4+2*
		f	*S*					*3*	-	*4*	*+21.4*	*117.1*	*-31.9*	*+52.9*	*.618*	
		2_2	S'					1	-	2	+21.0	118.5	-30.4	+52.3	.599	
		2_1	S'					1	-	1	+21.6	116.2	-32.8	+53.3	.629	
			S)					1	-	1	+21.9	115.0	-33.9	+53.7	.644	
	45	*p•*1_1	(◇) *S*	1c		(1u)			(10)	(36)	-24.5	68.5	-80.5	+114.7	.989	
June 2		*4*	*48*	*11*	*1*	*6*	*3*	*12*	*91*	*450*	*{-0.5}*	*{148.9}*		*{-15.0}*	*86*	*411*
153.463 G /1107/	42		△ ▮	1	1			3	33	250	+19.9	211.9	+78.3	-69.7	.983	
		p•1_{1-4}	*N*	*1c*	*1r*			*2×*	*(33)*	*249*	*(+19.9*	*211.9*	*+78.3)*	*-69.7*	*.983*	*×←*
		f•2_1	*S*					*1*	-	*(1)*	*(+23.0*	*204.1*	*+70.5)*	*-65.7*	*.954*	
	43		◇–◇	4		3		3	17	86	-21.9	202.8	+69.2	-113.2	.944	
		p	*S*	*3*		*2*			*15*	*68*	*-21.6*	*203.8*	*+70.2*	*-112.7*	*.949*	
		f	*N*	*1*		*1*		*3*	*2*	*18*	*-23.4*	*199.1*	*+65.5*	*-115.3*	*.926*	
		1	S	1		1			8	32	-21.4	204.5	+70.9	-112.4	.953	
		3	S	2		1			7	36	-21.7	203.1	+69.5	-112.9	.946	
			(N)					1	-	4	-22.8	201.1	+67.5	-114.4	.937	
		4_3	N					1	-	2	-23.7	200.4	+66.8	-115.4	.933	
		(4_2)	N					1	-	1	-24.4	199.1	+65.5	-116.4	.926	
		4_1	N	1		1			2	11	-23.4	198.2	+64.6	-115.5	.920	
	44		◇–◇	2		2	1	2	10	49	+20.6	122.5	-11.1	+26.7	.402	*
		p	*N*	*1*		*1*	*1*	*1*	*7*	*31*	*+20.5*	*123.3*	*-10.2*	*+25.1*	*.394*	
		f	*S*	*1*		*1*		*1*	*3*	*18*	*+20.8*	*121.2*	*-12.6*	*+29.4*	*.416*	
		1	N	1		1a			6+	28	+20.6	123.4	-10.1	+24.8	.395	+5+
		3_1	N				1		1	2	+18.6	122.8	-10.8	+28.6	.372	
		1_0	N'					1	-	1	+20.7	122.4	-11.2	+26.9	.405	
		4_{12}	S	1		1			3+	17	+20.8	121.4	-12.4	+29.1	.414	+2+
			S)					1	-	1	+21.6	117.4	-16.2	+34.8	.457	
	45		▽–▮	2	1	1	1	4	22	161	-24.6	68.5	-65.1	+116.6	.923	
		p	*S*	*2*	*1*	*1*		*1*	*21*	*151*	*-24.6*	*68.9*	*-64.7*	*+116.7*	*.921*	
		f	*N*				*1*	*3*	*1*	*10*	*-23.8*	*62.1*	*-71.5*	*+114.9*	*.958*	
		1_1	S	1b	1q				18	139	-24.6	69.3	-64.3	+116.8	.919	
		1_2	S					1	-	1	-23.3	66.6	-67.0	+115.0	.934	
		1_0	S	1		1			3	11	-24.8	64.2	-69.4	+116.2	.948	
		2_2	N				1		1	5	-24.0	62.6	-71.0	+115.1	.955	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	OF SPOTS y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_1	N					2	-	4	-23.2	61.8	-71.8	+114.2	.959	
			N)					1	-	1	-25.3	60.5	-73.1	+116.2	.965	
June 3		*4*	*47*	*9*	*2*	*6*	*2*	*12*	*82*	*546*	*{-0.3}*	*{133.6}*		*{-14.6}*	*58*	*361*
154.293 G /0701/	42→	*f•2₄*	∇ *(S)*				(1)		(1)	(20)	(+20.7	205.4	+82.8)	-69.1	.994	
	43→		∇ Δ				1	1	1	9	-22.6	199.6	+77.0	-113.1	.978	
		p•3	*S*					*1*	-	*3*	*-21.3*	*203.3*	*+80.7*	*-111.5*	*.989*	
		f•4₁	*N*				*1*		*1*	*6*	*-23.2*	*197.8*	*+75.2*	*-113.9*	*.973*	
	44		◇-◇	4		3	4	4	23	67	+20.4	121.7	- 0.9	+2.3	.356	
		p	*N*	*2*		*1*	*3*	*3*	*7*	*26*	*+19.6*	*123.6*	*+ 1.0*	*-2.8*	*.341*	
		f	*S*	*2*		*2*	*1*	*1*	*16*	*41*	*+21.0*	*120.4*	*- 2.2*	*+5.5*	*.366*	
		1	N	2		1			4	12	+20.5	123.8	+ 1.2	-3.2	.357	
		3_1	N				2		2	8	+18.3	123.6	+ 1.0	-3.1	.320	train
		1_0	N				1		1	2	+21.2	123.3	+ 0.7	-1.7	.367	
		3_2	N					3	-	4	+18.5	123.1	+ 0.5	-1.5	.323	
		4_3	S				1		1	5	+21.0	121.4	- 1.2	+3.2	.365	train
		4_2	S	1		1			9	20	+21.0	120.7	- 1.9	+4.8	.366	
		4_1	S	1		1			6	13	+20.8	120.1	- 2.5	+6.5	.363	
			S					1	-	3	+21.7	118.4	- 4.2	+10.3	.381	
	45		◇-✖	11	1	6	4	7	56	297	-24.6	66.8	-55.8	+118.9	.859	
		p	*S*	*6*	*1*	*2*	*2*	*2*	*41*	*207*	*-24.9*	*68.8*	*-53.7*	*+119.7*	*.844*	
		f	*N*	*5*		*4*	*2*	*5*	*15*	*90*	*-24.0*	*62.1*	*-60.5*	*+117.0*	*.894*	
		1_1	S	4t	1p				31+	166	-25.0	69.5	-53.1	+120.1	.839+	15+7+6+3
			S)				1		1	4	-24.2	68.5	-54.1	+118.9	.846	
		1_3	S)					1	-	1	-23.9	67.9	-54.7	+118.4	.850	
		1_2	S	1		1			2	9	-23.5	66.8	-55.8	+117.6	.858	
			S				1	$1^{\times}$	1	6	-24.3	66.1	-54.5	+118.3	.866	$^{\times}{}_3$
		1_0	S'	1		1			6	21	-24.7	65.2	-57.4	+118.5	.873	
		2_4	N	1		1			2	5	-24.1	63.8	-58.8	+117.5	.882	
		2_2	N	2		1			5	43	-24.4	62.6	-60.1	+117.5	.892	
		2_3	N				1		1	6	-23.4	62.9	-59.7	+116.5	.888	$^{\times}{}_{14}{}^{o}{}_5$
		2_1	N	2+		2	1^{o}	$5^{\times}$	7	36	-23.7	61.2	-61.4	+116.5	.900	+→7+10
June 4		*4*	*49*	*15*	*1*	*9*	*10*	*12*	*81*	*393*	*{-0.2}*	*{122.6}*		*{-14.3}*	*101*	*435*
155.320 G /0741/	44		◇-◇	2		2	4	4	8	44	+19.9	122.3	+13.3	-32.2	.409	
		p	*N*	*1*		*1*	*1*	*1*	*3*	*24*	*+18.9*	*124.5*	*+15.5*	*-37.8*	*.414*	
		f	*S*	*1*		*1*	*3*	*3*	*5*	*20*	*+21.1*	*119.8*	*+10.8*	*-25.6*	*.404*	
		3_1	N				1		1	5	+18.1	125.2	+16.2	-40.2	.412	
		3_2	N	1		1			2	13	+18.5	124.4	+15.4	-38.3	.408	
		1	N					1	-	6	+20.5	124.0	+15.0	-34.6	.429	
		4_3	S				1		1	4	+21.2	120.7	+11.7	-27.6	.411	train
		4_2	S	1		1	$1^{\times}$	1	3	10	+20.9	120.1	+11.1	-26.5	.403	→7xsy$^{\times}{}_3$
		4_1	S				1		1	2	+20.6	119.4	+10.4	-25.7	.393	
			S					2	-	4	+21.9	118.1	+ 9.1	-21.4	.404	→8+7
	45		✖-✖	11	2	3		7	59	371	-24.6	66.0	-43.0	+124.0	.749	
		p	*S*	*5*	*1*	*2*		*4*	*38*	*212*	*-25.0*	*69.4*	*-39.6*	*+126.2*	*.719*	
		f	*N*	*6*	*1*	*1*		*3*	*21*	*159*	*-24.0*	*61.4*	*-47.6*	*+121.1*	*.789*	
		continued														

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	$L°_{CM}$	ϑ°	r/R	EXTRA DATA
		continued														
		1_1	S	3b	1q				31+	183	-25.2	69.7	-39.3	+126.6	.716	+22+5+2+
		1_3	S					1	-	1	-24.4	68.8	-40.2	+125.0	.720	
		1_2	S	1		1			4	16	-24.0	67.8	-41.3	+124.0	.729	
			S)					2	-	5	-23.6	67.2	-41.8	+123.2	.732	→8
		1_0	S	1		1		1	3	7	-24.3	65.6	-43.4	+123.2	.750	
		2_4	N					1	-	2	-24.1	63.7	-45.3	+122.1	.768	
		2_3	N	1		1		2×	3	17	-23.6	62.4	-46.6	+121.0	.778	×9↑9xsx
		2_{12}	N	5b	1n				18	140	-24.1	61.3	-47.7	+121.1	.791	
June 5		*2*	*31*	*13*	*2*	*5*	*4*	*11*	*67*	*415*	*{-0.1}*	*{109.0}*		*{-13.9}*	*95*	*570*
156.279	44		◇-▽	1		1	1	4	3	15	+20.4	121.8	+25.5	-49.0	.536	
G /0641/	*p*		*N*				*1*	*2*	*1*	*6*	*+19.4*	*125.0*	*+28.7*	*-53.7*	*.565*	
	f		*S*	*1*		*1*		*2*	*2*	*9*	*+21.0*	*119.7*	*+23.4*	*-45.9*	*.517*	
	3_1	N					1		1	3	+18.2	125.9	+29.6	-56.3	.566	
	1	N						2	-	3	+20.6	124.1	+27.8	-51.1	.563	
	4_3	S						1	-	1	+21.3	120.2	+23.9	-46.1	.525	
	4_2	S	1		1				2	5	+21.1	119.7	+23.4	-45.8	.518	
	4_1	S						1	-	3	+20.8	119.4	+23.1	-45.9	.512	
	45		♊ ◙	9	2	2		4	66	366	-24.7	65.4	-30.9	+132.2	.629	
	p		*S*	*2*	*1*	*1*		*3*	*40*	*197*	*-25.1*	*69.2*	*-27.1*	*+135.8*	*.594*	
	f		*N*	*7*	*1*	*1*		*1*	*26*	*169*	*-24.2*	*61.0*	*-35.3*	*+127.9*	*.670*	
	1_1	S		1b	1p				34	183	-25.2	69.3	-27.0	+136.0	.594	
	1_2	S		1		1			6	10	-24.5	68.3	-28.0	+134.1	.597	
		S)						2	-	2	-23.4	67.5	-28.7	+132.0	.596	→8↓6
	1_0	S						1	-	2	-24.3	66.0	-30.3	+131.8	.619	
	2_4	N						1	-	2	-24.7	63.0	-33.4	+130.0	.654	
	2_3	N	2+		1n				6	23	-23.7	61.7	-34.6	+127.6	.660	+→8
	2_{12}	N	5b	1a					20	144	-24.3	60.9	-35.4	+127.9	.672	
	46 ↑		◇ ▽	2		2	1	3	5	23	+20.0	145.0	+48.6	-64.1	.786	
	p		*N*				*1*	*2*	*1*	*7*	*+20.8*	*147.3*	*+51.0*	*-64.0*	*.810*	
	f		*S*	*2*		*2*		*1*	*4*	*16*	*+19.7*	*143.9*	*+47.6*	*-64.2*	*.775*	
	1	N					1	1	1	5	+20.9	147.6	+51.3	-63.9	.813	
		N)						1	-	2	+20.5	146.6	+50.3	-64.1	.803	
	2_1	S	1		1			1	2	5	+20.1	144.2	+47.9	-63.8	.780	
	2_2	S	1		1				2	11	+19.5	143.8	+47.4	-64.4	.773	
June 6		*3*	*42*	*12*	*2*	*5*	*2*	*11*	*74*	*404*	*{ 0.0}*	*{ 96.3}*		*{-13.5}*	*114*	*621*
157.443	44 ↓		△ △					2	-	2	+19.2	122.8	+41.9	-62.3	.712	
G /1039/	$p•3_1$		*N*					*1*	-	*1*	*+18.1*	*127.0*	*+46.1*	*-65.8*	*.753*	
	$f•4_2$		*S*					*1*	-	*1*	*+20.3*	*118.5*	*+37.6*	*-58.8*	*.670*	
	45		◙ ♊	7	2			7	58	366	-24.8	64.7	-16.2	+149.5	.497	
	p		*S*	*2*	*1*			*5*	*25*	*188*	*-24.9*	*68.7*	*-12.2*	*+155.6*	*.467*	
	f		*N*	*5*	*1*			*2*	*33*	*178*	*-24.7*	*60.5*	*-20.4*	*+143.0*	*.528*	
	1_{12}	S	2b	1p				4×	25+	187	-24.9	68.7	-12.2	+155.6	.467	+22+3×←
	1_0	S						1	-	1	-23.9	66.6	-14.3	+151.0	.468	
	2_4	N						1	-	1	-25.1	62.1	-18.8	+145.6	.519	
	2_{1-3}	N	5d	1a				1	33	177	-24.7	60.5	-20.4	+143.0	.528	*
		continued														

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		U 2_3	*N*	*1b*					*5+*	-	*-23.9*	*61.4*	*-19.5*	*+143.2*	*.511*	*+3+*
		U 2_2	*N*	*2b*					*19+*	-	*-25.2*	*60.5*	*-20.4*	*+143.6*	*.533*	*+16+3*
		U 2_1	*N*	*2b*					*9+*	-	*-24.2*	*60.4*	*-20.5*	*+142.1*	*.523*	*+6+3*
	46	◇	◇	4		4		1	14	63	+19.9	145.7	+64.8	-68.2	.917	
		p•1	*N*	*1*		*1*			*6*	*28*	*+20.4*	*148.0*	*+67.1*	*-68.0*	*.932*	
		f	*S*	*3*		*3*		*1*	*8*	*35*	*+19.5*	*143.9*	*+63.0*	*-68.4*	*.905*	
		2_2	S	1		1			2	12	+19.2	144.3	+63.4	-68.8	.907	
		2_1	S	1		1		1×	4	15	+19.9	144.1	+63.1	-68.0	.907	×+
		2_3	S	1		1			2	8	+19.2	143.0	+62.1	-68.5	.898	
	47→	△	◇	2	1	1		1	38	224	-21.3	6.2	-74.7	+112.1	.970	*
		p•1	*S*	*1c*	*1q*				*33*	*192*	*-21.2*	*7.3*	*-73.6*	*+112.1*	*.966*	
		f•2_1	*N*	*1*		*1*		*1×*	*5*	*32*	*-21.8*	*359.7*	*-81.2*	*+112.0*	*.991*	×5+
June 7		*4*	*56*	*13*	*3*	*5*		*11*	*110*	*655*	{+0.1}	{ 80.9}		{-13.0}	*130*	*796*
158.441	45	¤	¤	4	2		1	7	43	255	-24.7	65.5	- 2.2	+175.4	.429	
G /1035/		*p*	*S*	*1*	*1*			*2*	*26*	*168*	*-24.8*	*68.2*	*+ 0.5*	*-179.0*	*.426*	
		f	*N*	*3*	*1*		*1*	*5*	*17*	*87*	*-24.4*	*60.4*	*- 7.3*	*+164.5*	*.435*	
		N						1	-	1	-22.1	68.7	+ 1.0	-177.5	.382	
		1_{12}	S	1b	1p				26	165	-24.8	68.2	+ 0.5	-179.0	.426	
		1_4	S					1	-	2	-23.2	67.9	+ 0.2	-179.5	.400	
		1_0	S'					1	-	1	-23.3	67.6	- 0.2	+179.7	.401	
			N					1	-	1	-26.0	61.1	- 6.6	+166.9	.456	
		4_1	N					3	-	7	-25.4	61.1	- 6.7	+166.4	.447	
			N				1		1	3	-25.8	60.3	- 7.4	+165.2	.456	
		2_{1-3}	N	3d	1a				16	75	-24.3	60.2	- 7.5	+164.0	.434	
		U 2_3	*N*	*1*					*3+*	-	*-24.2*	*61.0*	*- 6.7*	*+165.6*	*.430*	*+2+*
		U 2_1	*N*	*1*					*7+*	-	*-23.8*	*60.2*	*- 7.5*	*+163.7*	*.427*	*+5+*
		U 2_2	*N*	*1*					*6+*	-	*-24.7*	*59.8*	*- 7.9*	*+163.5*	*.443*	*+5+*
	46→	◇	◇	4		2			17	159	+19.8	145.5	+77.8	-69.9	.979	
		p•1	*N*	*(1)*		*1*			*(5)*	*68*	*+20.4*	*148.6*	*+80.9*	*-69.4*	*.989*	
		f•2_{1-3}	*S*	*3b*		*1q*			*12*	*91*	*+19.3*	*143.1*	*+75.4*	*-70.2*	*.972*	
	47	◇	◙	2	1	1	2		53	257	-21.4	5.9	-61.8	+114.0	.901	
		p•1	*S*	*1c*	*1r*				*43*	*216*	*-21.3*	*6.9*	*-60.8*	*+114.1*	*.894*	
		f	*N*	*1*		*1*	*2*		*10*	*41*	*-22.0*	*0.4*	*-67.3*	*+113.7*	*.936*	
		2_2	N				2		2	21	-22.0	1.2	-66.5	+113.8	.932	
		2_1	N	1		1			8	20	-22.0	359.6	-68.1	+113.6	.940	
June 8		*3*	*45*	*10*	*3*	*3*	*3*	*7*	*113*	*671*	{+0.3}	{ 67.7}		{-12.6}	*130*	*746*
159.299	45	◇	¤	4	1	1	3	7	43	241	-24.4	65.2	+ 8.9	-161.8	.446	
G /0710/		*p*	*S*	*1*	*1*		*2*	*3*	*29*	*162*	*-24.6*	*67.7*	*+11.3*	*-157.1*	*.460*	
		f	*N*	*3*		*1*	*1*	*4*	*14*	*79*	*-24.0*	*60.2*	*+ 3.9*	*-171.5*	*.419*	
		(S)					1		1	2	-25.4	70.2	+13.9	-153.5	.487	
		1_{12}	S	1b	1q				27	153	-24.6	67.7	+11.3	-157.1	.460	
		1_4	S				1		1	2	-23.2	67.1	+10.8	-156.8	.437	
			S					3	-	5	-24.1	66.3	+ 9.9	-159.2	.445	→8
		4_2	N				1	1	1	3	-25.0	61.6	+ 5.3	-169.0	.438	
		continued														

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		4_1	N					3	-	5	-25.2	61.1	+ 4.7	-170.2	.439	
		2_{1-3}	N	3d		1n			13	71	-23.9	60.1	+ 3.8	-171.7	.417	
		U 2_1	*N*	*1*					*3*	-	*-23.4*	*60.1*	*+ 3.8*	*-171.5*	*.409*	
		U 2_{23}	*N*	*2*					*10+*	-	*-24.0*	*60.1*	*+ 3.7*	*-171.8*	*.418*	*+8+2*
	47		Δ-▮	2	1	1		3	43	258	-21.3	5.5	-50.8	+116.9	.812	
		p•1	*S*	*1b*	*1r*				*37*	*219*	*-21.1*	*6.4*	*-49.9*	*+117.0*	*.803*	
		f	*N*	*1*		*1*		*3*	*6*	*39*	*-22.2*	*0.2*	*-56.1*	*+116.4*	*.860*	
			(N)					1	-	1	-21.8	3.6	-52.8	+116.9	.831	
		2_2	N					2	-	19	-22.3	0.7	-55.6	+116.6	.856	
		2_1	N	1		1			6	19	-22.2	359.6	-56.8	+116.2	.865	
June 9		*2*	*35*	*6*	*2*	*2*	*3*	*10*	*85*	*499*	*{+0.4}*	*{ 56.4}*		*{-12.3}*	*125*	*732*
160.350	45		◇-▯	4	1	2	1	13	42	172	-24.3	65.4	+23.0	-139.8	.551	
G /0824/		*p*	*S*	*1*	*1*		*1*	*5*	*29*	*132*	*-24.4*	*66.9*	*+24.5*	*-138.0*	*.566*	
		f	*N*	*3*		*2*		*8*	*13*	*40*	*-23.9*	*60.2*	*+17.8*	*-145.9*	*.500*	
		1_{12}	S	1b	1p				28	124	-24.4	67.1	+24.7	-137.8	.568	
			S)					2	-	2	-24.4	65.3	+22.8	-139.6	.548	→5
			S)					2	-	2	-25.0	63.9	+21.5	-142.3	.545	
		3	S				1	1×	1	4	-23.9	63.9	+21.4	-141.1	.533	$\times_2$
		4_2	N					1	-	1	-24.5	61.8	+19.4	-144.4	.521	
			N)					2	-	4	-22.7	61.6	+19.2	-142.4	.499	↑8
		4_1	N					3	-	4	-25.2	60.8	+18.4	-146.6	.521	
			N)					2	-	2	-26.0	60.6	+18.2	-147.8	.529	→13
		2_1	N	1b		1			7	12	-22.9	60.5	+18.1	-144.2	.491	
		2_{23}	N	2		1			6	17	-24.3	59.4	+16.9	-147.7	.498	
	47		Δ-▮	1	1			5	41	230	-21.0	5.5	-37.0	+123.1	.671	
		p•1	*S*	*1b*	*1q*				*41*	*220*	*-21.0*	*5.8*	*-36.7*	*+123.2*	*.668*	
		f	*N*					*5*	-	*10*	*-21.7*	*359.9*	*-42.6*	*+120.9*	*.735*	
		4	N'					1	-	1	-21.5	2.4	-40.0	+121.9	.707	
		2_2	N					2	-	3	-22.2	0.3	-42.2	+121.7	.733	
		2_1	N					1	-	2	-22.3	359.5	-43.0	+121.4	.741	
			N					1	-	4	-21.1	359.1	-43.4	+119.7	.740	
June 10		*2*	*33*	*5*	*2*	*2*	*1*	*18*	*83*	*402*	*{+0.5}*	*{ 42.4}*		*{-11.8}*	*131*	*628*
161.361	45		◇-▯	5	1	3	4	4	30	168	-24.1	65.0	+36.0	-128.0	.681	
G /0840/		*p*	*S*	*2*	*1*		*1*	*1*	*19*	*126*	*-24.2*	*66.5*	*+37.4*	*-127.0*	*.696*	
		f	*N*	*3*		*3*	*3*	*3*	*11*	*42*	*-24.1*	*60.7*	*+31.7*	*-130.9*	*.638*	
		1_{12}	S	2b	1a				18+	112	-24.2	66.8	+37.7	-126.8	.699	+13+5
			S)					1	-	2	-24.7	64.6	+35.5	-129.0	.681	
		3	S				1		1	12	-23.7	63.8	+34.7	-128.2	.666	
			(N)					1	-	1	-22.7	62.0	+33.0	-128.1	.640	
		4_2	N	1		1	1×		4+	17	-24.4	61.3	+32.3	-130.9	.646	$\times_4$ +3+
		4_1	N	1		1			2	6	-25.1	61.0	+31.9	-132.1	.648	
		2_1	N				1	1	2	9	-22.5	60.8	+31.8	-128.8	.627	
		2_{23}	N	1		1	1×	1	3	9	-24.4	59.3	+30.2	-132.5	.625	$\times_{3\rightarrow syx}$

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	47		Δ ▮	1	1			4	40	204	-20.9	5.0	-24.0	+134.0	.530	
		p•1	*S*	*1b*	*1r*				*40*	*199*	*-20.9*	*5.1*	*-23.9*	*+134.1*	*.529*	
		f	*N*					*4*	*-*	*5*	*-20.7*	*0.2*	*-28.8*	*+128.9*	*.580*	
		4	N					1	-	1	-22.1	1.9	-27.1	+132.3	.574	
			N)					3	-	4	-20.4	359.8	-29.2	+128.0	.582	→12↑9
June 11		*2*	*32*	*6*	*2*	*3*	*4*	*8*	*70*	*372*	*{+0.6}*	*{ 29.1}*		*{-11.4}*	*112*	*592*
162.384	45		◇ ¤	5	1	3		8	27	138	-24.2	65.1	+49.6	-121.2	.812	
G /0912/		*p*	*S*	*2*	*1*			*4*	*19*	*114*	*-24.2*	*66.0*	*+50.5*	*-120.8*	*.820*	
		f	*N*	*3*		*3*		*4*	*8*	*24*	*-24.3*	*60.6*	*+45.1*	*-123.0*	*.772*	
		1_{12}	S	2b	1a				19	108	-24.2	66.1	+50.6	-120.7	.821	
			S					3	-	3	-25.3	64.3	+48.8	-122.6	.809	
		3	S					1	-	3	-24.1	64.0	+48.5	-121.3	.802	
			N)					1	-	1	-22.6	62.2	+46.7	-120.3	.780	
		4_1	N	1		1			3	5	-24.8	60.9	+45.3	-123.5	.776	
		4_2	N	2		2			5	13	-24.2	60.7	+45.2	-122.9	.773	
		(2_1)	N					2	-	3	-23.4	60.4	+44.9	-122.1	.767	→8
			N)					1	-	2	-25.3	59.1	+43.6	-125.0	.763	
	47		Δ ▮	1	1			2	37	201	-21.1	4.6	-11.0	+154.6	.414	
		p•1	*S*	*1b*	*1r*				*37*	*198*	*-21.1*	*4.7*	*-10.9*	*+154.7*	*.413*	
		f	*N*					*2*	*-*	*3*	*-21.4*	*359.6*	*-15.9*	*+145.8*	*.457*	
		4	N'					1	-	1	-22.5	1.3	-14.2	+150.0	.457	
			N)					1	-	2	-20.8	358.8	-16.8	+143.7	.457	
June 12		*2*	*31*	*6*	*2*	*3*		*10*	*64*	*339*	*{+0.7}*	*{ 15.5}*		*{-11.0}*	*99*	*527*
163.479	45		▽ ¤	2	1		1		18	111	-24.4	65.4	+64.3	-117.0	.923	
G /1130/		*p•1_{12}*	*S*	*2b*	*1q*				*17+*	*104*	*-24.4*	*65.7*	*+64.6*	*-117.0*	*.925*	*+14+3*
		f•4_2	*N*				*1*		*1*	*7*	*-24.0*	*61.0*	*+60.0*	*-117.6*	*.894*	
	47		Δ ▮	1	1			4	33	192	-21.4	4.1	+ 3.1	-172.5	.383	
		p•1	*S*	*1c*	*1r*				*33*	*187*	*-21.4*	*4.2*	*+ 3.2*	*-172.2*	*.383*	
		f	*N*					*4*	*-*	*5*	*-21.2*	*359.7*	*- 1.4*	*+176.6*	*.379*	
			N)					1	-	1	-21.6	1.4	+ 0.3	-179.2	.383	
			N)					1	-	1	-20.0	359.5	- 1.6	+175.9	.359	
			N					2	-	3	-21.5	359.2	- 1.9	+175.5	.384	
	48 ↑	*f•2*	Δ *S*					1	-	1	+34.3	348.7	-12.3	+17.7	.581	
June 13		*3*	*39*	*3*	*2*		*1*	*5*	*51*	*304*	*{+0.9}*	*{ 1.0}*		*{-10.5}*	*75*	*442*
ROT N_o *1656*																
164.448	45→		Δ ¤	1	1			1	23	116	-24.5	65.4	+77.2	-115.2	.982	
G /1045/		*p•1_{12}*	*S*	*1c*	*1q*				*23*	*114*	*-24.5*	*65.5*	*+77.3*	*-115.2*	*.982*	
		f•4_2	*N'*					*1*	*-*	*2*	*-23.9*	*61.2*	*+73.0*	*-115.1*	*.967*	
	47		Δ ▮	1	1			1	36	186	-21.5	3.9	+15.7	-146.6	.460	
		p•1	*S*	*1c*	*1r*				*36*	*185*	*-21.5*	*3.9*	*+15.7*	*-146.6*	*.460*	
		f•	*N*					*1*	*-*	*1*	*-20.1*	*1.3*	*+13.1*	*-149.3*	*.419*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	48 ↓		▽ △				2	1	2	8	+34.3	347.7	- 0.6	+0.9	.550	
		p•	*N*					*1*	-	*2*	*+33.5*	*348.7*	*+ 0.5*	*-0.8*	*.539*	
		f↓2	*S*				*2*		*2*	*6*	*+34.5*	*347.3*	*- 0.9*	*+1.4*	*.554*	
June 14		*3*	*38*	*2*	*2*		*2*	*3*	*61*	*310*	*{+1.0}*	*{348.2}*		*{-10.1}*	*76*	*388*
165.622	47		△ ▣	1	1			5	36	203	-21.7	3.7	+31.1	-128.7	.617	*
G /1455/		*p*	*S*	*1*	*1*			*1*	*36*	*198*	*-21.7*	*3.7*	*+31.1*	*-128.7*	*.617*	
		f	*N*					*4*	-	*5*	*-22.3*	*2.8*	*+30.2*	*-130.5*	*.612*	
			S					1	-	1	-23.6	6.2	+33.5	-129.3	.657	
			N					1	-	2	-22.5	6.2	+33.5	-127.9	.649	
		1	S	1b	1r				36	197	-21.7	3.7	+31.1	-128.7	.617	
			(N)					1	-	1	-21.1	1.0	+28.4	-130.2	.583	
			N					2	-	2	-22.7	0.3	+27.7	-133.2	.590	
June 15		*1*	*16*	*1*	*1*			*5*	*36*	*203*	*{+1.1}*	*{332.7}*		*{- 9.6}*	*57*	*319*
166.276	47		△ ▣	2	1			2	36	174	-21.5	3.6	+39.6	-122.8	.708	
G /0638/		*p•1*	*S*	*2b*	*1p*				*36+*	*172*	*-21.5*	*3.6*	*+39.6*	*-122.8*	*.708*	*+33+3*
		f↓	*N*					*2*	-	*2*	*-22.6*	*0.1*	*+36.1*	*-126.4*	*.678*	
June 16		*1*	*15*	*2*	*1*			*2*	*36*	*174*	*{+1.2}*	*{324.0}*		*{- 9.3}*	*51*	*246*
167.543	47		△ ▣	1	1			1	32	175	-21.5	3.6	+56.4	-116.1	.864	
G /1302/		*p•1*	*S*	*1c*	*1r*				*32*	*174*	*-21.5*	*3.6*	*+56.4*	*-116.1*	*.864*	
		f•	*(N)*					*1*	-	*1*	*-19.1*	*359.4*	*+52.2*	*-114.5*	*.823*	
	49 →		△ △					3	-	3	+25.9	225.9	-81.3	+64.1	.990	
		p↓1	*N)*					*2*	-	*(2)*	*+25.8*	*226.2*	*-81.0*	*+64.2*	*.989*	
		f•2	*S'*					*1*	-	*(1)*	*+26.0*	*225.3*	*-81.9*	*+63.9*	*.991*	
June 17		*2*	*24*	*1*	*1*			*4*	*32*	*178*	*{+1.4}*	*{307.2}*		*{- 8.8}*	*32*	*177*
168.484	47	*p•1*	⌶	*S*	*1c*	*1q*			23	181	-21.5	3.5	+68.8	-113.4	.946	
G /1137/																
	49		△ △					4	-	10	+25.9	224.7	-70.0	+63.2	.949	
		p•(1)	*N)*					*1*	-	*1*	*+24.9*	*226.4*	*-68.4*	*+63.9*	*.940*	
		f	*S*					*3*	-	*9*	*+26.0*	*224.5*	*-70.2*	*+63.1*	*.950*	
		2	S'					2	-	6	+25.9	224.8	-69.9	+63.1	.949	
			S)					1	-	3	+26.1	224.0	-70.8	+63.0	.953	
	50 ↑	*p*	△	*S*				2	-	3	- 8.7	230.7	-64.1	+100.3	.906	
		1	S					1	-	2	- 9.0	231.0	-63.8	+100.7	.904	
			S)					1	-	1	- 8.1	230.1	-64.7	+99.6	.910	
	51 →	*p•1*	◇	*N'*	1		1		(8)	17	+19.3	210.8	-84.0	+70.7	.995	*
June 18		*4*	*43*	*2*	*1*	*1*		*6*	*31*	*211*	*{+1.5}*	*{294.8}*		*{- 8.4}*	*17*	*130*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	FO y	SPOTS x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
169.559 G /1325/	47→	*p*•1	◇	*S*	1c		1a*		14	181	-21.1	3.1	+82.5	-111.5	.994	
	49↓	*f*•2	▽	*S*			1	1×	1	7	+25.9	224.5	-56.0	+60.4	.859	×↑7
	50	*p*•1	△	*S*				2	-	3	- 8.8	231.6	-48.9	+103.0	.766	
	51	*p*•1	◇	*N*	1		1		6	16	+19.4	210.7	-69.9	+69.9	.944	
	52→		△		1	1		1	21	93	-21.1	205.4	-75.1	+112.0	.974	*
		p•1_1		*S*	*1b*	*1a**			*21*	*88*	*-21.0*	*205.8*	*-74.8*	*+112.0*	*.973*	
		f•4_0		*N'*				*1*	-	*(5)*	*-22.3*	*199.2*	*-81.3*	*+112.7*	*.992*	
June 19		*5*	*52*		*3*	*1*	*2*	*1* *4*	*42*	*300*	{+1.6}	{280.5}		{- 7.9}	*18*	*103*
170.439 G /1033/	/50/															INTERMITTENT
	51	*p*•1	◇	*N*	1		1		8	21	+19.4	210.6	-58.3	+68.4	.865	
	52		◇-△		3	1	2	5 7	33	149	-22.0	203.8	-65.1	+114.7	.926	
		p		*S*	*1*	*1*		*4* *4*	*21*	*99*	*-21.4*	*205.7*	*-63.2*	*+114.4*	*.914*	
		f		*N*	*2*		*2*	*1* *3*	*12*	*50*	*-23.3*	*200.1*	*-68.8*	*+115.4*	*.948*	
		1_1	S		1b	1a			17	62	-21.2	206.5	-62.4	+114.4	.909	
		1_2	S'					1	1	8	-21.1	205.3	-63.6	+114.0	.917	
		3_1	S					1	1	8	-22.5	205.2	-63.7	+115.5	.919	
		3_2	S					1	-	4	-22.0	204.3	-64.6	+114.8	.924	
			S)					2	-	3	-22.8	204.0	-64.9	+115.5	.927	
		1_3	S'					2	2	13	-21.3	203.5	-65.4	+113.9	.928	
		1_4	S'					1	-	1	-20.2	203.5	-65.4	+112.7	.926	
			N					1	-	3	-23.5	203.2	-65.7	+116.2	.932	
		2_2	N'					1	-	2	-24.3	201.6	-67.3	+116.6	.942	
		4_1	N					1	-	2	-22.1	200.6	-68.3	+114.1	.945	
		2_1	N	1		1	1×		9	28	-23.8	200.3	-68.6	+115.9	.948	×9
		4_0	N	1		1			3	15	-22.4	198.8	-70.1	+114.2	.954	
June 20		*2*	*23*		*4*	*1*	*3*	*5* *7*	*41*	*170*	{+1.7}	{268.9}		{- 7.5}	*33*	*133*
171.363 G /0843/	/50/															INTERMITTENT
	51	*p*•1	◇	*N*	1b		1		6	10	+19.5	210.7	-46.0	+65.2	.749	
	52		◇+▣		10	1	4	2 7	54	262	-21.6	204.9	-51.8	+117.8	.828	
		p		*S*	*8*	*1*	*2*	*1* *4*	*48*	*235*	*-21.4*	*205.4*	*-51.2*	*+117.8*	*.823*	
		f		*N*	*2*		*2*	*1* *3*	*6*	*27*	*-23.2*	*200.1*	*-56.6*	*+118.1*	*.871*	
		5_1	S		1		1		3	6	-21.3	208.2	-48.5	+118.8	.798	
		5_2	S'					2	-	2	-21.6	207.0	-49.6	+118.7	.810	→5
		6	N'					1	-	1	-22.3	206.1	-50.6	+119.1	.820	
		1_{1-3}	S		5t+1p				35	160	-21.2	205.6	-51.1	+117.6	.821	+→25
		3_{12}	S		2		1		9	53	-22.1	205.1	-51.5	+118.6	.828	
		1_4	S				1	1×	1	13	-20.7	203.7	-52.9	+116.5	.836	×↑5
			S					1	-	1	-23.2	202.4	-54.2	+118.8	.853	
		2_2	N					2	-	4	-24.8	201.4	-55.3	+120.3	.866	→9
		4_1	N				1		1	3	-21.7	200.9	-55.7	+116.7	.861	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_1	N	1		1			3	10	-23.6	199.7	-57.0	+118.5	.875	
		4_0	N	1		1			2	9	-22.6	199.0	-57.7	+117.1	.878	
		U 1_1	*S*	*2*					*15+*	-	*-21.0*	*206.7*	*-50.0*	*+117.8*	*.811*	*+9+6*
		U 1_2	*S*	*2*					*5*	-	*-21.2*	*205.3*	*-51.4*	*+117.5*	*.823*	
		U 1_3	*S*	*1b*					*15*	-	*-21.3*	*204.6*	*-52.1*	*+117.4*	*.830*	
June 21		*2*	*26*	*11*	*1*	*5*	*2*	*7*	*60*	*272*	*{+1.8}*	*{256.7}*		*{- 7.1}*	*69*	*307*
172.633 G /1512/	50	*f*•2	Δ	*N*				1	-	1	- 8.9	227.0	-12.9	+130.5	.291	
	51		Δ-◇	1		1		2	6	13	+19.5	210.2	-29.7	+56.8	.560	
		p		*N*	*1*		*1*	*1*	*6*	*12*	*+19.4*	*210.4*	*-29.5*	*+56.8*	*.557*	
		f•		*S*				*1*	-	*1*	*+21.3*	*207.5*	*-32.4*	*+56.0*	*.604*	
		1	N	1		1			6	10	+19.4	210.7	-29.2	+56.6	.553	
			N					1	-	2	+19.4	209.0	-30.9	+57.9	.574	
	52		◇‡◙	δ 11	1	6	5	15	68	336	-21.9	204.8	-35.1	+126.9	.668	
		p		*S* *7*	*1*	*2*	*4*	*6*	*53*	*256*	*-21.6*	*205.7*	*-34.2*	*+127.1*	*.656*	
		f		*N* *4*		*4*	*1*	*9*	*15*	*80*	*-23.0*	*201.9*	*-38.0*	*+126.2*	*.704*	
		5_1	S	1		1			2	7	-21.3	209.2	-30.6	+129.4	.617	
		5_2	S				3	$3^{\times}$	3	13	-21.7	208.5	-31.4	+129.3	.628	→9↑6xy
			S)					1	-	2	-20.7	207.2	-32.7	+127.0	.634	$\times_4$
		[6	N]	1		1			2	(10]	-22.0	206.4	-33.5	+128.0	.652	
		[3_{12}	S]	2b		1n			12	(75]	-22.2	205.6	-34.3	+127.8	.662	
		1_{1-3}	S	$4t^+1p$					35	148]	-21.2	205.5	-34.4	+126.4	.656	+→15
			S				1	$1^{\times}$	1	9	-22.6	203.9	-35.9	+127.0	.681	$\times_6$←9
		(1_4)	S					1	-	2	-21.0	203.7	-36.1	+124.8	.673	
		2_3	N	1		1		$2^{\times}$	2	19	-24.6	202.5	-37.4	+128.6	.709	$\times_{13}$
		4_2	N	1		1			2	4	-21.3	201.7	-38.2	+123.9	.697	↑10xxs
			N				1	3	1	10	-23.8	200.9	-39.0	+126.6	.719	→5↑8xyx
		4_1	N	1b		1u		$2^{\times}$	8	32	-22.0	200.8	-39.1	+124.3	.709	$\times_{3}$xsx
		(2_2)	N					1	-	2	-24.7	200.6	-39.3	+127.5	.727	
			N					1	-	3	-24.8	198.9	-40.9	+126.6	.743	
		U 1_1	*S*	*2*					*12*	-	*-21.2*	*206.1*	*-33.7*	*+126.9*	*.649*	
		U 1_2	*S*	*1*					*10*	-	*-21.2*	*205.5*	*-34.4*	*+126.4*	*.656*	
		U 1_3	*S*	*1b*					*13*	-	*-21.2*	*204.8*	*-35.0*	*+125.9*	*.663*	
June 22		*3*	*40*	*12*	*1*	*7*	*5*	*18*	*74*	*350*	*{+2.0}*	*{239.9}*		*{- 6.5}*	*111*	*523*
173.663 G /1554/	50	↓ *f*•2	Δ	*N*				1	-	1	- 9.0	226.7	+ 0.5	-177.6	.194	
	51		▽-◇	2		1	2		7	14	+20.6	209.3	-17.0	+40.5	.422	
		p		*N* *2*		*1*	*1*		*6*	*10*	*+19.8*	*210.0*	*-16.3*	*+40.6*	*.406*	
		f•		*S*			*1*		*1*	*4*	*+22.4*	*207.6*	*-18.7*	*+40.3*	*.460*	
		1	N	2		1			5	7	+19.4	210.7	-15.5	+40.1	.394	
			N				1		1	3	+20.8	208.2	-18.0	+41.9	.435	
	52		◇‡◙	δ 12	1	5	1	8	51	237	-21.7	204.9	-21.3	+140.0	.526	
		p		*S* *7*	*1*	*2*		*1*	*34*	*178*	*-21.4*	*205.9*	*-20.4*	*+140.8*	*.514*	
		f		*N* *5*		*3*	*1*	*7*	*17*	*59*	*-22.4*	*201.9*	*-24.2*	*+137.4*	*.563*	
		5_1	S	1		1			2	5	-21.3	210.3	-16.0	+147.1	.473	
		5_2	S					1	-	1	-21.5	209.7	-16.5	+146.4	.480	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		6	N	2		1			4	(15	-22.2	206.6	-19.7	+142.7	.516	
		3_{12}	S	2		1n			4	(20	-22.5	206.2	-20.0	+142.7	.523	
		1_{1-3}	S	4t+1p					28	152	-21.3	205.7	-20.6	+140.3	.514	+→15
		2_3	N					3	-	3	-24.5	202.1	-24.2	+140.0	.582	→10+8
		4_2	N	1		1	1×		4	14	-21.6	201.3	-24.9	+135.5	.561	×6+7
			N					2	-	3	-23.7	200.2	-26.0	+137.0	.591	→5+5
		4_1	N	2		1n			9	19	-21.9	199.8	-26.4	+134.3	.579	
			N					1	-	3	-24.8	198.6	-24.6	+136.8	.617	
			N					1	-	2	-26.7	198.1	-28.2	+138.5	.639	
		U 1_1	*S*	*2*					*13+*	-	*-21.1*	*206.1*	*-20.2*	*+140.6*	*.509*	*+10+3*
		U 1_2	*S*	*1*					*3*	-	*-21.3*	*205.5*	*-20.7*	*+140.2*	*.516*	
		U 1_3	*S*	*1b*					*12*	-	*-21.4*	*205.2*	*-21.0*	*+139.9*	*.519*	
	53	→	◊+◘	4	1	3			85	730	+14.6	146.7	-79.5	+75.5	.983	*
		p	*N*	*2*	*1*	*1*			*68*	*485*	*+14.5*	*148.1*	*-78.1*	*+75.6*	*.979*	
		f	*S*	*2*		*2*			*17*	*245*	*+14.8*	*144.0*	*-82.3*	*+75.4*	*.991*	
		1	N	1c	1r				68	436	+14.3	148.6	-77.6	+75.8	.977	
		2_1	S	1		1			(7)	(143)	+14.3	144.2	-82.1	+75.9	.990	
		2_2	S	1		1			(10)	(102)	(+15.5	143.6	-82.6)	+74.7	.992	
		3	N'	(1)		(1)			(-)	(49)	+16.6	143.5	-82.7	+73.6	.992	
June 23		*4*	*54*	*18*	*2*	*9*	*3*	*9*	*143*	*982*	*{+2.1}*	*{226.2}*		*{- 6.1}*	*133*	*695*
174.554 G /1318/	51	*p*•1	◊	*N*	1b		1		5	9	+19.3	210.6	- 3.8	+12.1	.302	
	52		◊+◘	δ	11	1	7	3	5	63	302	-21.6	205.4	- 9.1	+160.1	.430
		p		*S*	*6*	*1*	*3*	*2*		*44*	*231*	*-21.3*	*206.2*	*- 8.3*	*+161.5*	*.422*
		f		*N*	*5*		*4*	*1*	*5*	*19*	*71*	*-22.2*	*202.6*	*-11.8*	*+155.5*	*.457*
		5_1	S					1		1	4	-21.2	211.1	- 3.3	+172.2	.402
		3_{12}	S	2		2				6+	32	-22.0	207.4	- 7.1	+164.4	.426
		7_1	S					1		1	6	-21.3	206.8	- 7.7	+162.6	.419
		6	N					1		2	(12	-22.3	206.6	- 7.9	+163.1	.435
			N						2	-	3	-19.2	206.4	- 8.1	+159.9	.388
		1_{1-3}	S	3t+1p						32	165	-21.1	205.9	- 8.6	+160.6	.420
		7_2	S	1		1				4+	(24	-22.2	205.8	- 8.6	+161.4	.436
		8_{12}	N	2		1				7	21	-23.1	204.2	-10.2	+159.0	.458
		4_2	N	1		1		3		3	14	-21.8	200.9	-13.5	+151.8	.461
		4_{11}	N	1		1				3	8	-22.3	199.4	-15.1	+149.8	.480
		4_{12}	N	1		1				4+	13	-21.8	199.4	-15.0	+149.3	.473
		U 1_1	*S*	*1*						*7+*	-	*-20.9*	*206.5*	*- 7.9*	*+161.9*	*.414*
		U 1_2	*S*	*1*						*10*	-	*-21.0*	*206.0*	*- 8.5*	*+160.8*	*.418*
		U 1_3	*S*	*1b*						*15*	-	*-21.2*	*205.5*	*- 9.0*	*+159.8*	*.424*
	53		◘+◘	δ	9	3	2	2	2	117	838	+14.3	145.8	-68.7	+75.5	.933
		p		*N*	*4*	*1*	*1*	*1*	*1*	*81*	*451*	*+14.1*	*147.6*	*-66.8*	*+75.5*	*.922*
		f		*S*	*5*	*2*	*1*	*1*	*1*	*36*	*387*	*+14.5*	*143.6*	*-70.8*	*+75.4*	*.946*
		1_{1-3}	N	3c	1r					77	421	+14.0	147.8	-66.6	+75.6	.921
			N)					1		-	4	+12.0	147.3	-67.2	+77.9	.924
			N)				1			(1)	11	+15.7	145.7	-68.8	+74.0	.935
			S				1			(1)	14	+12.7	145.5	-69.0	+77.3	.935
		2_1	S	2b	1a					16	(245)	+14.0	144.2	-70.3	+76.0	.943
		2_2	S	2b	1a					17	(92)	+15.6	143.4	-71.0	+74.3	.947
		3	N	1		1				3	15	+16.9	143.3	-71.1	+72.9	.948
		4	S	1		1		1×		(2)	(36)	+16.1	139.6	-74.8	+73.9	.966

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		U 1_1	*N*	*1*					*67*	-	*+14.1*	*148.0*	*-66.4*	*+75.5*	*.920*	
		U 1_2	*N*	*1*					*4*	-	*+13.1*	*147.1*	*-67.3*	*+76.7*	*.925*	
		U 1_3	*N*	*1*					*4*	-	*+14.0*	*146.0*	*-68.5*	*+75.8*	*.933*	
	54 ↑	*f*•	▽	*N*				1	1	2	+ 2.7	214.5	+ 0.1	-9.7	.010	*Old C* *
June 24		*4*	*63*		*21*	*4*	*10*	*6*	*7*	*186*	*1151*	*{+2.2}*	*{214.4}*		*{- 5.7}*		*211 1165*
175.307 G /0722/	51	*p*•1	◇	*N*	2			1		4	7	+19.2	210.5	+ 6.1	-18.9	.309	
	52		◇≠		7	1	4	6	12	73	372	-21.5	205.7	+ 1.2	-177.1	.406	
		p		*S*	*5*	*1*	*2*	*4*	*5*	*60*	*273*	*-21.0*	*206.5*	*+ 2.1*	*-175.1*	*.399*	
		f		*N*	*2*		*2*	*2*	*7*	*13*	*99*	*-22.7*	*203.4*	*- 1.1*	*+177.4*	*.425*	
		3_3	S						1	-	1	-21.5	210.0	+ 5.5	-167.5	.415	
			S)						1	-	1	-20.2	208.5	+ 4.1	-170.1	.389	
		3_{12}	S		3b		1n		1×	12	77	-21.2	208.3	+ 3.9	-171.1	.405	×2→
			S						2	-	3	-22.0	207.0	+ 2.5	-174.3	.415	
		7_1	S					1		1	4	-21.4	206.9	+ 2.5	-174.3	.405	
		7_{21}	S'					1		1	5	-22.1	206.0	+ 1.6	-174.5	.415	
		1_{1-3}	S		1b+1p					41	167	-20.9	205.9	+ 1.4	-176.6	.396	+→17
		7_{22}	S		1b		1			3	(5	-22.4	205.4	+ 1.0	-177.9	.419	
		8_{12}	N		1b		1			8	(78	-22.8	204.3	- 0.2	+179.5	.425	
			S					2		2	10	-20.4	203.8	- 0.7	+178.4	.388	→10
			N						2	-	2	-22.9	202.7	- 1.8	+176.2	.427	↑5
		4_2	N					2	1×	2	6	-21.9	200.8	- 3.7	+171.7	.415	×2
		4_1	N		1		1		2×	3	9	-22.0	199.4	- 5.0	+168.8	.420	×↑
			N						1	-	2	-25.1	199.4	- 5.1	+170.1	.468	
			N						1	-	2	-23.3	198.1	- 6.4	+166.6	.445	
	53		⋈		15	3	4	1	1	153	980	+14.4	145.8	-58.7	+74.4	.859	
		p		*N*	*5*	*1*	*1*			*93*	*674*	*+14.1*	*147.4*	*-57.1*	*+74.6*	*.846*	
		f		*S*	*10*	*2*	*3*	*1*	*1*	*60*	*306*	*+15.2*	*142.4*	*-62.1*	*+74.0*	*.888*	
		1_{1-4}	N		4e	1q				89	636	+13.9	147.6	-56.9	+74.8	.844	
		6_1	S'		1		1			5	22	+13.8	144.7	-59.8	+75.3	.869	
		3	N		1		1a			4	38	+17.1	143.5	-61.0	+71.8	.882	
		2_1	S		3d	1u				22+	91	+14.4	143.0	-61.5	+74.9	.883	+11+6+5
		2_2	S		2b	1u				19+	117	+15.9	142.9	-61.6	+73.2	.886	+14+5
			S)						1	-	2	+17.0	141.1	-63.4	+72.1	.900	
		2_3	S		3		1			8	44	+15.2	141.0	-63.5	+74.1	.899	
		4	S		1		1	1×		6	30	+16.3	139.5	-65.0	+73.1	.911	×5→7
		U 1_4	*N*		*1*					*3*	-	*+13.7*	*149.0*	*-55.4*	*+75.0*	*.831*	
		U 1_1	*N*		*1*					*73*	-	*+14.0*	*147.7*	*-56.8*	*+74.7*	*.843*	
		U 1_2	*N*		*1*					*6*	-	*+13.0*	*147.4*	*-57.1*	*+76.0*	*.845*	
		U 1_3	*N*		*1b*					*7*	-	*+13.9*	*146.4*	*-58.1*	*+75.1*	*.855*	
	54 ↓		▽	▽				3	1	3	8	+ 3.7	214.2	+ 9.9	-81.6	.175	
		p•		*S*				*1*	*1*	*1*	*4*	*+ 4.6*	*214.1*	*+ 9.6*	*-76.2*	*.172*	
		f•		*N*				*2*		*2*	*4*	*+ 2.7*	*214.3*	*+10.2*	*-87.0*	*.178*	
June 25		*4*	*74*		*24*	*4*	*9*	*10*	*14*	*233*	*1367*	*{+2.3}*	*{204.5}*		*{- 5.3}*		*302 1708*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
176.528	51		Δ ∇				1	2	1	7	+20.1	206.9	+18.6	-43.9	.431	
G /1241/		*p*•1	*N*				*1*		*1*	*3*	*+19.3*	*210.5*	*+22.2*	*-50.5*	*.464*	
		f•	*S*					*2*	-	*4*	*+20.7*	*204.1*	*+15.8*	*-39.0*	*.407*	→9
	52		◊≠▣	6	1	4	5	11	60	307	-21.1	206.1	+17.8	-140.6	.492	
		p	*S*	*5*	*1*	*3*	*3*	*7*	*51*	*249*	*-20.8*	*206.8*	*+18.5*	*-138.4*	*.494*	
		f	*N*	*1*		*1*	*2*	*4*	*9*	*58*	*-22.3*	*203.4*	*+15.1*	*-150.0*	*.483*	
			S)					1	-	1	-22.6	211.2	+22.9	-139.4	.554	
		3_3	S	1		1			2	9	-21.6	210.5	+22.2	-139.0	.537	
		3_{12}	S	2		1		$1^{\times}$	12^{+}	68	-20.9	209.0	+20.8	-139.9	.516	$+9+3^{\times}3^{\dagger}$
		7_1	S					2	-	3	-20.8	207.4	+19.1	-142.0	.499	
		7_{22}	S					1	-	2	-22.0	206.2	+17.9	-145.2	.503	
		1_{1-3}	S	1b	1p				31	153	-20.7	205.7	+17.4	-144.4	.482	
		7_{21}	S	1		1			3	(5	-22.0	205.2	+16.9	-146.8	.497	
		1_5	S				2		2	4	-19.9	204.9	+16.6	-144.5	.465	
		8_{12}	N	1b		1			7^{+}	(48	-22.3	203.8	+15.5	-149.3	.486	$+6+$
			S)					1	-	1	-19.4	203.8	+15.6	-145.7	.450	
			S				1	1	1	3	-21.6	203.5	+15.2	-149.1	.475	
			N					1	-	1	-20.3	203.0	+14.8	-148.2	.455	
			N				1	2	1	5	-22.8	202.4	+14.2	-152.0	.483	
		4_2	N'					1	-	2	-22.4	200.1	+11.8	-155.6	.461	
		4_1	N				1		1	2	-21.9	199.2	+11.0	-156.8	.449	
	53		▣▣▣	16	2	3	1	5	172	1235	+14.6	144.9	-43.4	+71.6	.703	*
		p	*N*	*8*	*1*	*2*			*100*	*757*	*+14.1*	*146.7*	*-41.6*	*+71.8*	*.681*	
		f	*S*	*8*	*1*	*1*	*1*	*5*	*72*	*478*	*+15.3*	*142.0*	*-46.3*	*+71.3*	*.738*	
		1_{1-4}	N	4e	1u				87	(475	+14.0	147.4	-40.9	+71.7	.672	
		5_{12}	N	3d		1u			9	(222	+13.6	145.7	-42.6	+72.7	.691	
		3	N	1b		1n			4	(60	+16.7	144.3	-43.9	+68.8	.715	
			S				1		1	(14	+17.3	142.8	-45.5	+68.5	.734	
		6_1	S	1		1			4	66	+14.0	142.8	-45.5	+72.8	.726	
		2_{1-3}	S	7d	1u				67	383	+15.4	141.9	-46.4	+71.2	.740	
		4	S					5	-	15	+17.0	140.7	-47.6	+69.4	.756	→10†10
		U 1_4	*N*	*1b*					*8*	-	*+13.8*	*148.7*	*-39.6*	*+71.5*	*.655*	
		U 1_1	*N*	*1*					*59*	-	*+14.2*	*147.4*	*-40.9*	*+71.4*	*.672*	
		U 1_2	*N*	*1*					*4*	-	*+13.2*	*147.4*	*-40.9*	*+72.8*	*.670*	
		U 5_1	*N*	*1*					*3*	-	*+12.8*	*147.3*	*-41.0*	*+73.4*	*.670*	
		U 1_3	*N*	*1*					*16*	-	*+13.6*	*146.6*	*-41.7*	*+72.4*	*.680*	
		U 5_2	*N*	*2*					*4*	-	*+14.2*	*144.5*	*-43.8*	*+72.2*	*.708*	
		U 2_1	*S*	*3b*					*22*	-	*+14.7*	*142.5*	*-45.8*	*+72.1*	*.732*	
		U 2_2	*S*	*2b*					*22*	-	*+16.1*	*142.4*	*-45.9*	*+70.2*	*.735*	
		U 2_3	*S*	*2b*					*23*	-	*+15.5*	*140.9*	*-47.4*	*+71.3*	*.751*	
June 26		*3*	*76*	*22*	*3*	*7*	*7*	*18*	*233*	*1549*	*{+2.4}*	*{188.3}*		*{- 4.8}*	*351*	*2296*
177.536	51	*p*•1	Δ *N'*					1	-	2	+19.4	210.1	+35.2	-61.3	.622	
G /1252/	52		◊≠▣	7	1	5	6	11	40	192	-20.7	206.2	+31.2	-128.8	.623	
		p	*S*	*6*	*1*	*4*	*4*	*6*	*36*	*163*	*-20.5*	*206.7*	*+31.7*	*-128.1*	*.627*	
		f	*N*	*1*		*1*	*2*	*5*	*4*	*29*	*-21.8*	*203.3*	*+28.3*	*-132.8*	*.603*	
		3_3	S	3		2		$1^{\times}$	7	18	-21.5	210.8	+35.9	-126.2	.678	$^{\times}\dagger$
		3_{12}	S	2		2		2	5	17	-20.7	209.9	+34.9	-125.9	.663	
		7_1	S				2		2	5	-20.4	207.9	+32.9	-126.9	.639	
			S)					1	-	1	-22.4	207.7	+32.7	-129.7	.652	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		7_2	S				1		1	3	-21.9	205.7	+30.8	-130.7	.628	
		1_{1-3}	S	1b	1q				20	112	-20.3	205.6	+30.7	-128.7	.614	
		1_5	S				1	1×	1	6	-19.5	204.7	+29.8	-128.3	.598	×2
		8_2	N	1		1			2	13	-21.7	204.7	+29.7	-131.3	.616	
		8_1	N				2		2	7	-22.0	203.4	+28.4	-132.8	.604	†8
			S					1	-	1	-19.7	203.4	+28.4	-129.7	.585	
			N					2	-	4	-20.8	202.6	+27.6	-132.1	.586	†9
			N					2	-	3	-23.3	201.0	+26.0	-137.0	.592	
		4_1	N					1	-	2	-22.0	199.0	+24.0	-137.5	.560	
	53		⌑⊕⌑	17	3	3	1	9	144	1106	+14.5	144.8	-29.8	+66.2	.533	
		p		*N 9*	*1*	*2*			*91*	*665*	*+13.9*	*146.8*	*-28.1*	*+66.1*	*.503*	
		f		*S 8*	*2*	*1*	*1*	*9*	*53*	*441*	*+15.4*	*141.8*	*-32.2*	*+66.4*	*.577*	
		1_{1-4}	N	5e	1u				78	(422	+14.1	147.2	-27.7	+65.5	.498	
		5_{12}	N	3d		1u			11	(226	+13.4	146.1	-28.8	+67.5	.510	
			S					1	-	3	+16.5	145.8	-29.2	+62.2	.530	
		3	N	1		1a			2	17	+16.3	144.5	-30.4	+63.4	.546	
		6_2	S'					1	-	10	+13.6	144.1	-30.9	+68.3	.539	
			S					2	-	3	+17.2	143.2	-31.8	+62.7	.568	→5
		2_{12}	S	4d	1n				19	189	+15.1	142.8	-32.2	+66.4	.564	
			S)					1	-	1	+17.9	142.7	-32.2	+61.8	.578	
		6_1	S				1		1	9	+14.2	142.6	-32.4	+68.1	.562	
			S)					2	-	2	+17.2	141.8	-33.1	+63.5	.586	
		4	S	3d+		1n			6	26	+16.4	141.6	-33.3	+64.9	.584	+→7
			S)					1	-	1	+17.2	140.8	-34.2	+64.1	.600	
		2_3	S	1c	1a			1×	27	197	+15.7	140.7	-32.2	+66.5	.592	×2→
		U 1_4	*N*	*2*					*6*	-	*+13.6*	*148.4*	*-26.6*	*+65.6*	*.480*	
		U 1_2	*N*	*1*					*7*	-	*+13.8*	*147.7*	*-27.3*	*+65.7*	*.490*	
		U 1_3	*N*	*1*					*17*	-	*+13.6*	*147.2*	*-27.8*	*+66.5*	*.496*	
		U 1_1	*N*	*1*					*48*	-	*+14.4*	*147.0*	*-27.9*	*+65.1*	*.502*	
		U 5_1	*N*	*1b*					*6*	-	*+12.8*	*146.9*	*-28.0*	*+68.1*	*.496*	
		U 5_2	*N*	*2*					*5*	-	*+14.0*	*145.2*	*-29.8*	*+66.9*	*.526*	
		U 2_2	*S*	*1*					*6*	-	*+15.9*	*143.0*	*-31.9*	*+64.9*	*.564*	
		U 2_1	*S*	*3b*					*13+*	-	*+14.7*	*142.6*	*-32.3*	*+67.1*	*.563*	*+6+3+2+*
	55 †		Δ-∇				2	3	2	13	+32.3	232.3	+57.4	-54.1	.880	
		p•1		*N*			*2*	*1*	*2*	*11*	*+32.4*	*232.8*	*+57.9*	*-54.2*	*.884*	*→7yxy*
		f		*S*				2	-	*2*	*+32.0*	*229.7*	*+54.7*	*-53.8*	*.860*	
			(S)					1	-	1	+31.9	230.5	+55.5	-54.1	.866	
		2	S'					1	-	1	+32.0	228.8	+53.8	-53.4	.854	
June 27		*4*	*84*	*24*	*4*	*8*	*9*	*24*	*186*	*1313*	*{+2.5}*	*{175.0}*		*{- 4.3}*	*308*	*2185*
178.269 G /0628/	51 † *p*•		Δ *(N)*					1	-	2	+18.1	211.0	+45.7	-67.7	.738	
	52		◇≠◇	3		3	1	9	23	139	-20.7	206.9	+41.7	-121.8	.734	
		p		*S 2*		*2*	*1*	*4*	*19*	*118*	*-20.4*	*207.0*	*+41.7*	*-121.5*	*.733*	
		f		*N 1*		*1*		*5*	*4*	*21*	*-22.3*	*206.7*	*+41.5*	*-123.8*	*.740*	
		3_3	S					2	-	4	-21.6	211.2	+46.0	-120.7	.780	
		3_{12}	S'				1		1	5	-20.8	210.5	+45.3	-120.1	.769	
		7_1	S	1		1a		1×	5	33	-21.0	209.0	+43.7	-121.1	.756	×†
		8_3	N	1		1			4	15	-22.5	208.2	+43.0	-123.2	.756	
		1_{1-3}	S	1b		1p			13+	73	-20.1	205.7	+40.4	-121.8	.718	+11+
		1_5	S)					1	-	3	-19.1	204.9	+39.7	-120.8	.705	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		8_2	N					1	-	2	-21.6	204.9	+39.7	-124.0	.718	
		8_1	N'					2	-	2	-22.1	203.3	+38.1	-125.6	.705	
			N)					2	-	2	-21.4	200.6	+35.3	-126.6	.673	
	53		⧗≠⧗	13	2	6	3	6	122	849	+14.4	145.5	-19.7	+57.5	.389	
	p		*N*	*7*	*1*	*2*	*1*		*84*	*672*	*+14.1*	*146.6*	*-18.6*	*+57.0*	*.372*	
	f		*S*	*6*	*1*	*4*	*2*	*6*	*38*	*177*	*+15.8*	*141.4*	*-23.8*	*+59.3*	*.456*	
		1_{1-4}	N	3e	1u				70	(408	+14.2	147.1	-18.2	+56.0	.367	
		5_{12}	N	3d		1			11	(242	+13.7	146.0	-19.2	+58.6	.376	
			(S)					3	-	4	+17.2	145.8	-19.5	+51.3	.409	
		3	N	1		1			2	16	+16.0	144.5	-20.7	+55.3	.415	
		6_2	S'				1		1	3	+13.5	144.2	-21.1	+61.1	.400	
			N				1		1	6	+12.9	144.2	-21.1	+62.6	.396	
		2_2	S	2		1			5+	13	+16.0	142.8	-22.5	+57.5	.438	+2+2+
			S)					1	-	2	+17.5	142.5	-22.8	+54.7	.454	
		2_1	S	2		2			6	16	+15.0	142.2	-23.0	+59.9	.439	→7
		6_1	S				1	1×	1	7	+13.9	141.6	-23.7	+62.9	.440	×↓
		4	S	1b		1n		1×	5	16	+16.6	141.6	-23.6	+57.4	.458	×→
		2_3	S	1b	1a				20	116	+15.8	140.8	-24.4	+59.7	.464	
	U	1_4	*N*	*/2/*					*2+*	-	*+13.9*	*148.5*	*-16.8*	*+54.9*	*.345*	*+1+1*
	U	1_2	*N*	*1*					*6*	-	*+13.9*	*147.6*	*-17.6*	*+56.1*	*.355*	
	U	1_1	*N*	*1*					*47*	-	*+14.5*	*147.0*	*-18.3*	*+55.6*	*.370*	
	U	1_3	*N*	*1b*					*15*	-	*+13.7*	*147.0*	*-18.3*	*+57.3*	*.363*	
	U	5_1	*N*	*1*					*3*	-	*+13.2*	*146.5*	*-18.7*	*+59.3*	*.365*	
	U	5_2	*N*	*2*					*5*	-	*+14.1*	*145.8*	*-19.5*	*+58.1*	*.383*	
	55↓		Δ Δ					2	-	5	+32.6	232.6	+67.3	-56.0	.938	
	p•1		*N'*					*1*	-	*4*	*+32.8*	*233.7*	*+68.4*	*-56.0*	*.944*	
	f•2		*S'*					*1*	-	*1*	*+32.0*	*228.4*	*+63.1*	*-55.9*	*.915*	
June 28		*4*	*75*	*16*	*2*	*9*	*4*	*18*	*145*	*995*	*{+2.6}*	*{165.3}*		*{- 4.0}*	*255*	*1758*
179.318 G /0739/	52		◊≠◊	6		4	3	2	25	118	-20.5	206.2	+54.8	-116.0	.854	
	p		*S*	*5*		*3*	*2*	*2*	*22*	*104*	*-20.2*	*206.2*	*+54.8*	*-115.8*	*.853*	
	f		*N*	*1*		*1*	*1*		*3*	*14*	*-22.5*	*206.6*	*+55.2*	*-118.2*	*.862*	
		7_1	S'	1		1	1×		4	12	-20.9	209.8	+58.4	-115.4	.884	×4
		8_3	N'	1		1			2	9	-22.4	208.2	+56.8	-117.6	.875	
		7_3	S'	1		1			2	10	-22.9	206.8	+55.5	-118.6	.866	
			S)					2	-	8	-19.0	205.6	+54.3	-114.5	.846	→10
		1_{1-3}	S	3b		1p			15	70	-19.9	205.6	+54.2	-115.6	.848	
		1_5	S)				1		1	4	-19.0	204.9	+53.5	-114.9	.840	
		8_1	N'				1		1	5	-22.6	203.6	+52.2	-119.4	.839	
	53		⧗≠⧗	10	2	3	5	7	117	764	+14.4	145.6	- 5.8	+25.0	.228	
	p		*N*	*6*	*1*	*1*			*85*	*583*	*+14.1*	*146.7*	*- 4.7*	*+21.8*	*.214*	
	f		*S*	*4*	*1*	*2*	*5*	*7*	*32*	*181*	*+15.5*	*141.9*	*- 9.4*	*+35.3*	*.274*	
		1_{1-4}	N	3e	1u				76	(428	+14.2	147.1	- 4.3	+20.0	.213	
		5_{12}	N	3		1u			8	(153	+13.8	145.6	- 5.8	+26.9	.217	
		3	N				1		1	2	+16.0	144.6	- 6.8	+26.2	.258	
			(S)					3	-	4	+18.9	144.4	- 7.0	+22.4	.304	
		6_2	S	2		1			4	(33	+13.7	144.3	- 7.0	+32.0	.226	
		6_3	S'				1	1×	1	6	+13.7	143.4	- 8.0	+36.0	.236	×2
		2_2	S				1		1	3	+16.0	143.0	- 8.3	+31.2	.270	
			S)				1		1	2	+17.7	142.8	- 8.5	+28.7	.296	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_1	S				2		2	10	+15.2	142.3	- 9.0	+34.9	.266	→6
		4	S	1		1			4^+	15	+16.7	141.7	- 9.6	+33.5	.292	+2+
		2_3	S	1b	1a				19	104	+15.9	141.0	-10.4	+37.1	.288	
			S)					1	-	2	+17.2	140.7	-10.6	+35.1	.308	
		6_1	S'					2	-	2	+13.2	140.4	-11.0	+45.4	.262	↑9
	U	1_4	*N*	*1b*					*4*	-	*+14.2*	*148.3*	*- 3.1*	*+14.6*	*.206*	
	U	1_{12}	*N*	*1b*					*51*	-	*+14.4*	*147.1*	*- 4.3*	*+19.6*	*.217*	
	U	1_3	*N*	*1b*					*21*	-	*+13.8*	*146.8*	*- 4.5*	*+21.9*	*.207*	
	U	5_1	*N*	*1*					*2*	-	*+13.3*	*145.9*	*- 5.5*	*+26.7*	*.207*	
	U	5_2	*N*	*2*					*6*	-	*+14.0*	*145.5*	*- 5.9*	*+27.0*	*.220*	
	56 ↑ *p*•		Δ	*N'*				2	-	4	+30.0	137.4	-14.0	+24.5	.508	
	57 ↑ *p*•		Δ	*N)*				1	-	1	+22.3	94.1	-57.3	+65.5	.858	
June 29		*4*	*72*	*16*	*2*	*7*	*8*	*12*	*142*	*887*	*{+2.7}*	*{151.4}*		*{- 3.5}*	*253*	*1617*
180.329	52		▽≠◇	3		2	2	2	16	82	-20.9	205.9	+67.9	-113.3	.944	
G /0754/	*p*			*S*	*3*	*2*	*1*	*2*	*15*	*79*	*-20.9*	*205.9*	*+67.9*	*-113.3*	*.944*	
	f•8_3			*N'*			*1*		*1*	*3*	*-21.8*	*206.9*	*+69.0*	*-114.0*	*.951*	
				S)				1	-	2	-18.8	206.3	+68.4	-111.1	.944	
		7_3	S	1		1	$1^×$		4	30	-23.0	206.2	+68.2	-115.4	.948	$×_{15}$→8
		1_{1-3}	S	2		1			11^+	45	-19.7	205.7	+67.7	-112.1	.942	+8+3
		1_5	S'					1	-	2	-18.6	204.8	+66.8	-111.1	.936	
	53		◇–▣	7	1	3	1	14	89	602	+14.3	146.2	+ 8.2	-34.6	.247	
	p			*N*	*4*	*1*	*1*		*1*	*74*	*553*	*+14.3*	*146.6*	*+ 8.6*	*-36.1*	*.248*	
	f			*S*	*3*		*2*	*1*	*13*	*15*	*49*	*+15.3*	*142.0*	*+ 4.1*	*-17.7*	*.229*	
		1_{1-4}	N	3e	1q				66	389	+14.4	147.1	+ 9.1	-37.4	.255	
		5_{1-4}	N	1d		1n			8	163	+13.9	145.4	+ 7.4	-33.1	.232	
		4_2	S'					1	-	1	+19.1	144.5	+ 6.6	-21.0	.302	
		3	N					1	-	1	+16.0	144.4	+ 6.4	-25.2	.253	
		6_3	S	1		1	$1^×$		4	18	+14.0	143.2	+ 5.2	-24.2	.214	$×_4$←6
		2_1	S					2	-	2	+15.3	142.4	+ 4.4	-19.0	.230	
		6_4	S					3	-	3	+13.9	141.9	+ 3.9	-19.0	.205	→7↑6
		4	S					3	-	4	+16.5	141.9	+ 3.9	-15.6	.246	
		2_3	S	2		1		$1^×$	11	18	+16.0	141.1	+ 3.2	-13.0	.236	×↓
		4_1	S'					2	-	2	+17.5	140.6	+ 2.6	- 9.9	.258	
			(S)					1	-	1	+17.8	137.8	- 0.2	+ 0.6	.260	
	U	1_4	*N*	*1*					*3*	-	*+13.9*	*148.3*	*+10.3*	*-41.9*	*.260*	
	U	1_{12}	*N*	*1*					*49*	-	*+14.6*	*147.1*	*+ 9.2*	*-37.1*	*.257*	
	U	1_3	*N*	*1b*					*14*	-	*+13.9*	*146.8*	*+ 8.8*	*-37.8*	*.244*	
	U	5_4	*N*	*/1/*					*1*	-	*+13.0*	*145.9*	*+ 7.9*	*-37.2*	*.223*	
	U	5_1	*N*	*/2/*					*2*	-	*+13.5*	*145.7*	*+ 7.7*	*-35.1*	*.228*	
	U	5_2	*N*	*1b*					*4*	-	*+14.1*	*145.3*	*+ 7.4*	*-32.4*	*.233*	
	U	5_3	*N*	*/1/*					*1*	-	*+15.1*	*144.7*	*+ 6.7*	*-27.8*	*.242*	
	/56/															INTERMITTENT
	57	*p*•	Δ	*N)*				1	-	3	+22.2	94.4	-43.5	+61.7	.727	
June 30		*3*	*54*	*10*	*1*	*5*	*3*	*17*	*105*	*687*	*{+2.8}*	*{138.0}*		*{- 3.1}*	*183*	*1225*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
181.527	52→	*p*•1_{1-3}	(∇)*S'*				(1)		(1)	(68)	-19.9	206.0	+83.9	-110.3	.997	
G /1239/	53		◇-✖	3	1	1	5	7	68	492	+14.6	146.8	+24.6	-62.8	.456	
		p	*N*	*2*	*1*		*3*		*63*	*451*	*+14.5*	*147.2*	*+25.0*	*-63.4*	*.460*	
		f	*S*	*1*		*1*	*2*	*7*	*5*	*41*	*+15.8*	*142.3*	*+20.2*	*-56.1*	*.405*	
		1_{1-4}	N	2b	1q				59	402	+14.5	147.4	+25.2	-63.6	.463	
		5_{23}	N				1		2	44	+14.6	145.6	+23.5	-62.0	.440	
		5_4	N				1		1	2	+13.4	145.6	+23.5	-64.4	.432	
		3	N				1		1	3	+15.5	144.6	+22.5	-59.0	.431	
		6_3	S				1		1	8	+14.8	143.6	+21.5	-59.5	.413	
		4_2	S'					1	-	2	+19.6	144.0	+21.9	-50.4	.457	
			S					2	-	5	+19.7	142.9	+20.8	-48.9	.445	
			S					1	-	2	+18.6	142.4	+20.3	-50.3	.429	
		6_4	S	1		1		1×	3	16	+13.5	142.1	+19.9	-60.7	.382	×$_2$←
		2_3	S'					1	-	1	+16.2	141.2	+19.8	-54.6	.401	
		4_1	S				1	1×	1	7	+17.5	140.6	+18.5	-50.1	.396	×$_2$↑8
		U 1_4	*N*	*/1/*					*1*	-	*+13.7*	*148.2*	*+26.1*	*-65.9*	*.470*	
		U 1_3	*N*	*1b*					*15*	-	*+13.9*	*147.4*	*+25.3*	*-64.8*	*.459*	
		U 1_{12}	*N*	*1*					*43*	-	*+14.7*	*147.3*	*+25.2*	*-63.2*	*.464*	
		U (5_2)	*N*	*/1/*					*1*	-	*+14.3*	*146.1*	*+23.9*	*-63.0*	*.443*	
		U 5_3	*N*	*/1/*					*1*	-	*+14.9*	*145.2*	*+23.1*	*-60.9*	*.436*	
	56 ↓	*p*•	∇	*N'*			1		1	2	+30.4	138.7	+16.6	-28.1	.526	
	/57/															INTERMITTENT
	58 ↑		△ ∇				1	1	1	4	+39.6	134.8	+12.7	-15.8	.623	
		p•1_1	*N*				*1*		*1*	*3*	*+39.6*	*135.6*	*+13.5*	*-16.7*	*.626*	
		f•2_1	*S*					*1*	-	*1*	*+39.5*	*132.4*	*+10.3*	*-13.0*	*.614*	
July 1		*4*	*58*	*3*	*1*	*1*	*8*	*8*	*71*	*566*	{*+3.0*}	{*122.1*}		{*- 2.5*}	*124*	*896*
182.351	53		∇-✖	3	1	1	2	12	70	412	+14.5	147.1	+35.8	-69.7	.607	
G /0826/		*p*	*N*	*3*	*1*	*1*		*6*	*68*	*396*	*+14.4*	*147.2*	*+36.0*	*-70.0*	*.609*	
		f	*S*				*2*	*6*	*2*	*16*	*+17.9*	*142.4*	*+31.1*	*-61.9*	*.561*	
			(N)					1	-	1	+13.3	150.6	+39.4	-73.0	.648	
			(N)					1	-	1	+16.8	149.2	+37.9	-67.2	.641	
		1_{1-4}	N	2b	1p				64	362	+14.4	147.4	+36.2	-70.0	.611	
			N					1	-	1	+17.2	146.8	+35.6	-65.4	.614	
		5_{23}	N					2	-	3	+14.7	145.3	+34.1	-68.8	.583	
		5_4	N	1		1			4	26	+13.6	145.2	+34.0	-70.6	.579	
		3	N					1	-	2	+15.3	145.2	+34.0	-67.7	.585	
		4_2	S'					1	-	1	+19.8	143.0	+31.7	-59.2	.579	
			S				1	2	1	10	+18.4	142.7	+31.5	-61.3	.568	
		6_4	S'					2	-	2	+14.1	142.3	+31.1	-68.3	.542	
		4_3	S)					1	-	1	+19.4	141.4	+30.2	-58.8	.557	
		4_1	S				1		1	2	+17.5	140.9	+29.6	-61.5	.539	
		U 1_4	*N*	*/1/*					*1*	-	*+13.4*	*148.2*	*+37.0*	*-72.0*	*.618*	
		U 1_3	*N*	*1b*					*19*	-	*+13.9*	*147.4*	*+36.2*	*-70.9*	*.609*	
		U 1_{12}	*N*	*1*					*44*	-	*+14.7*	*147.4*	*+36.2*	*-69.6*	*.611*	
	/57/															INTERMITTENT

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	58		◇–◇	2		2	4	6	11	47	+39.4	133.7	+22.5	-26.2	.668	
		p	*N*	*1*		*1*	*4*	*2*	*8*	*28*	*+39.5*	*135.5*	*+24.3*	*-28.0*	*.678*	
		f	*S*	*1*		*1*		*4*	*3*	*19*	*+39.4*	*130.9*	*+19.7*	*-23.6*	*.651*	
		1_1	N	1		1	2^x	1	6	18	+39.5	136.4	+25.2	-28.7	.684	→8xys^{x}8
		1_2	N				1		1	3	+39.5	135.0	+23.8	-27.5	.677	train
		1_3	N				1		1	6	+39.5	133.5	+22.3	-26.1	.667	
		1_4	N'					1	-	1	+38.2	133.4	+22.1	-27.1	.652	
		2_2	S					1	-	1	+39.3	132.2	+21.0	-25.0	.658	
			S					1	-	2	+40.7	131.7	+20.5	-23.4	.670	
		2_3	S'					1	-	1	+38.6	131.4	+20.1	-24.8	.645	
		2_1	S	1		1		1^x	3	15	+39.3	130.7	+19.5	-23.5	.649	^{x}→
	59	→*p*•1	◇ *N*	1		1			7	33	+17.7	31.4	-79.9	+72.5	.984	
July 2		*3*	*45*	*6*	*1*	*4*	*6*	*18*	*88*	*492*	*{+3.1}*	*{111.2}*		*{- 2.1}*	*130*	*736*
183.371	53		Δ–✖	5	1	1		4	68	387	+14.5	147.2	+49.5	-73.8	.769	
G /0854/		*p*	*N*	*5*	*1*	*1*		*2*	*68*	*385*	*+14.4*	*147.2*	*+49.5*	*-73.8*	*.770*	
		f	*S*					*2*	-	*2*	*+18.4*	*142.1*	*+44.4*	*-67.3*	*.722*	
		1_{1-4}	N	4t	1p				65	354	+14.5	147.4	+49.7	-73.8	.772	
		5_4	N	1		1			3	28	+13.7	145.1	+47.4	-74.4	.745	
			N)					2	-	3	+13.5	143.9	+46.2	-74.4	.730	
		4_4	S'					1	-	1	+17.0	142.7	+45.0	-69.3	.725	
		4_3	S'					1	-	1	+19.7	141.5	+43.8	-65.3	.719	
		1_4	*N*	*1*					*3*	-	*+13.4*	*148.4*	*+50.7*	*-75.3*	*.781*	
		1_3	*N*	*2*					*14*	-	*+13.8*	*147.6*	*+49.9*	*-74.7*	*.772*	
		1_{12}	*N*	*1*					*48*	-	*+14.7*	*147.3*	*+49.6*	*-73.4*	*.771*	
	/57/															INTERMITTENT
	58		◇–◇	11		6	2	2	37	166	+39.1	133.7	+36.0	-37.3	.752	
		p	*N*	*7*		*3*			*20*	*107*	*+39.3*	*135.7*	*+38.0*	*-38.5*	*.767*	
		f	*S*	*4*		*3*	*2*	*2*	*17*	*59*	*+38.9*	*130.0*	*+32.3*	*-35.2*	*.724*	
		1_{12}	N	$5d^+$		1n			15	88	+39.3	136.1	+38.4	-38.7	.770	+→19+12
		1_3	N	1		1			3	14	+39.4	134.1	+36.4	-37.4	.757	
		1_4	N	1		1			2	5	+38.4	133.7	+36.0	-38.2	.747	
		4	S				1		1	3	+39.9	132.2	+34.5	-35.7	.747	
		2_4	S	1		1		2	3	14	+38.5	131.0	+33.3	-36.3	.728	→6xsx
		2_3	S	1		1			5	19	+38.8	130.1	+32.4	-35.3	.725	
		2_2	S				1		1	6	+39.5	129.7	+32.0	-34.3	.727	
		2_1	S	2		1			7	17	+38.8	128.9	+31.1	-34.3	.716	
	59	*p*•1	◇ *N*	1		1			5	15	+18.0	31.5	-66.2	+71.7	.918	
July 3		*3*	*44*	*17*	*1*	*8*	*2*	*6*	*110*	*568*	*{+3.2}*	*{ 97.7}*		*{- 1.7}*	*140*	*725*
184.398	53		Δ ✖	4	1	2		5	47	269	+14.6	147.1	+62.9	-75.2	.893	
G /0933/		*p*	*N*	*4*	*1*	*2*		*3*	*47*	*167*	*+14.6*	*147.1*	*+62.9*	*-75.2*	*.893*	
		f	*S*					*2*	-	*2*	*+17.1*	*141.3*	*+57.2*	*-71.8*	*.848*	
		1_4	N	1		1		1^x	3	9	+13.6	149.0	+64.8	-76.5	.907	^{x}3↑
		1_{1-3}	N	2b	1p				42	245	+14.7	147.2	+63.0	-75.1	.894	
			(N)					1	-	1	+17.4	145.3	+61.2	-71.9	.881	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		5_4	N	1		1			2	5	+13.3	144.8	+60.7	-76.6	.875	
			N)					1	-	7	+12.7	144.5	+60.4	-77.3	.872	
		4_4	S'					1	-	1	+16.8	142.1	+58.0	-72.3	.854	
		4_1	S'					1	-	1	+17.4	140.5	+56.4	-71.3	.841	
		1_{12}	*N*	*1*					*37*	-	*+14.8*	*147.2*	*+63.0*	*-75.0*	*.894*	
		1_3	*N*	*1*					*5*	-	*+13.8*	*147.2*	*+63.1*	*-76.2*	*.894*	
	/57/															INTERMITTENT
	58		◇-◙	9	1	4	1	5	71	435	+39.1	133.3	+49.4	-44.3	.843	
		p	*N*	*6*	*1*	*2*			*48*	*308*	*+39.3*	*135.3*	*+51.4*	*-45.0*	*.858*	
		f	*S*	*3*		*2*	*1*	*5*	*23*	*127*	*+38.7*	*128.5*	*+44.4*	*-42.6*	*.808*	
		1_{1-3}	N	4e	1p				43^+	285	+39.4	135.4	+51.6	-45.0	.859	+32+5+
		1_4	N	1		1			2	12	+38.4	133.9	+49.8	-45.4	.843	+3+2+
		3	N	1		1			3	11	+38.1	133.0	+48.9	-45.3	.836	
		4	S				1		1	6	+39.4	131.7	+47.5	-43.4	.832	
			S)					1	-	1	+40.0	130.9	+46.8	-42.4	.830	
			S)					1	-	1	+39.4	129.7	+45.6	-42.5	.820	
		2_4	S	2		1		$2^×$	7	34	+38.6	129.1	+44.9	-43.0	.811	$×_3$→11
		2_{1-3}	S	1b		1			15^+	84	+38.7	128.0	+43.9	-42.4	.804	+13+
			S)					1	-	1	+39.5	127.7	+43.6	-41.4	.806	
	59	*p•1*	◇ *N*	1		1			4	13	+18.3	32.0	-52.1	+69.5	.802	
	60	*p•1*	◘ *S*	1	1				17	76	-19.9	1.1	-83.1	+110.3	.996	*
July 4		*4*	*55*	*15*	*3*	*7*	*1*	*10*	*139*	*793*	*{+3.3}*	*{ 84.1}*		*{- 1.2}*	*127*	*738*
185.357	53	*p*	◙ *N*	2	1		1		32	194	+14.9	147.0	+75.6	-75.4	.968	
G /0835/		1_{12}	N	2b	1				31^+	184	+15.0	147.0	+75.6	-75.3	.968	+28+3
		1_3	N				1		1	10	+13.9	146.8	+75.3	-76.5	.967	
	/57/															INTERMITTENT
	58		◇-◙	6	1	4	1	3	59	351	+39.4	132.3	+60.9	-47.7	.911	
		p	*N*	*4*	*1*	*2*	*1*		*42*	*243*	*+39.7*	*134.9*	*+63.4*	*-48.1*	*.926*	
		f	*S*	*2*		*2*		*3*	*17*	*108*	*+38.8*	*126.6*	*+55.1*	*-46.9*	*.878*	
		1_{1-3}	N	2b	1p		$1^×$		36	210	+39.9	135.1	+63.6	-47.9	.927	$×_7$↓
		1_4	N	1		1			4	23	+38.4	134.1	+62.7	-49.3	.920	
		3	N'	1		1			2	10	+38.3	133.0	+61.5	-49.2	.914	
		4	S'					1	-	1	+39.2	130.9	+59.5	-47.7	.904	
			S)					1	-	3	+39.9	129.0	+57.5	-46.5	.895	
		2_{1-4}	S	1c		1p			14	94	+38.6	126.5	+55.1	-47.0	.877	
			S	1		1		$1^×$	3	10	+39.9	125.9	+54.4	-45.5	.877	$×_3$↓
	59		Δ ◇	1		1		1	4	9	+18.7	31.8	-39.6	+65.3	.667	
		p•1	*N*	*1*		*1*			*4*	*8*	*+18.8*	*32.1*	*-39.3*	*+65.0*	*.663*	
		f•	*S*					*1*	-	*1*	*+17.8*	*29.1*	*-42.4*	*+67.6*	*.696*	
	60	*p•1*	◘ *S*	1c	1a*				25	100	-20.0	0.6	-70.9	+112.0	.959	
July 5		*4*	*49*	*10*	*3*	*5*	*2*	*4*	*120*	*654*	*{+3.4}*	*{ 71.4}*		*{- 0.8}*	*84*	*455*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
186.354	57		Δ⁄⁄	2	1		2	5	18	30	+21.2	94.2	+36.0	-60.1	.634	
G /0830/		*p*	*N*	*2*	*1*		*2*		*18*	*23*	*+21.4*	*94.8*	*+36.6*	*-60.1*	*.641*	
		f	*S*					*5*	*-*	*7*	*+20.5*	*92.4*	*+34.2*	*-60.0*	*.609*	
		1	N	2b	1u				16+	18	+21.8	95.1	+36.9	-59.6	.647	+14+2
		4	S'					1	-	1	+20.4	93.7	+35.5	-60.9	.625	
		3	N				2		2	5	+19.8	93.5	+35.3	-61.8	.619	
		2_1	S					3	-	5	+20.7	92.3	+34.1	-59.7	.609	→7
		2_2	S					1	-	1	+19.7	91.6	+33.4	-60.8	.596	
	58→		◇ ⧓	3	1	1	1		57	225	+39.8	132.1	+73.9	-49.9	.967	
		p	*N*	*2*	*1*		*1*		*50*	*170*	*+40.2*	*134.4*	*+76.2*	*-49.5*	*.976*	
		f•2_{1-4}	*S*	*1*		*1*			*7*	*55*	*+38.5*	*125.1*	*+66.9*	*-51.1*	*.940*	
		1_{1-3}	N	2b	1u				49+	160	+40.3	134.4	+76.2	-49.4	.976	+37+12
		1_4	N'				1		1	10	+38.6	134.4	+76.1	-51.1	.975	
	59→	*p*•1	Δ *N*					1	-	1	+19.3	32.6	-25.7	+55.8	.496	
	60	*p*•1	⧓ *S*	1c	1r				17	95	-20.1	0.2	-58.1	+115.0	.882	
July 6		*4*	*45*	*6*	*3*	*1*	*3*	*6*	*92*	*351*	{*+3.5*}	{ *58.2*}		{*- 0.3*}	*70*	*249*
187.364	57		⧓-⧓	4	2		2	4	54	249	+21.3	93.8	+48.9	-65.2	.776	
G /0844/		*p*	*N*	*1*	*1*		*2*	*2*	*28*	*141*	*+22.2*	*95.3*	*+50.4*	*-64.5*	*.793*	
		f	*S*	*3*	*1*			*2*	*26*	*108*	*+20.1*	*91.9*	*+47.0*	*-66.2*	*.754*	
		1	N	1c	1p			2×	26	127	+22.3	95.4	+50.5	-64.4	.794	×↑
		3	N				1		1	5	+20.0	94.5	+49.6	-67.1	.780	
		1_1	N				1		1	9	+21.9	93.9	+49.1	-64.4	.779	
		4	S					2	-	4	+20.7	93.9	+49.1	-66.1	.776	
		2	S	3b	1p				26+	104	+20.1	91.8	+46.9	-66.2	.753	+19+5+2
	60	*p*•1	⧓ *S*	1c	1r				16	91	-19.9	359.8	-45.1	+119.8	.769	
July 7		*2*	*29*	*5*	*3*		*2*	*4*	*70*	*340*	{*+3.6*}	{ *44.9*}		{*+ 0.1*}	*89*	*430*
188.423	57		⧓-⧓	4	2		1	4	45	206	+20.9	92.9	+62.1	-68.4	.889	
G /1009/		*p*	*N*	*3*	*1*		*1*	*1*	*19*	*95*	*+22.4*	*95.2*	*+64.4*	*-67.0*	*.907*	
		f	*S*	*1*	*1*			*3*	*26*	*111*	*+19.5*	*91.0*	*+60.2*	*-69.6*	*.874*	
		1	N	3d	1p				18+	89	+22.5	95.3	+64.5	-66.9	.908	+9+7+2
		3	N'				1		1	2	+19.8	94.7	+63.9	-69.8	.902	
		1_1	N					1	-	4	+22.1	93.8	+62.9	-67.2	.897	
		4	S'					1	-	1	+20.8	93.7	+62.9	-68.5	.896	
			S)					2	-	3	+20.6	92.5	+61.6	-68.6	.887	
		2	S	1b	1p				26	107	+19.5	90.9	+60.1	-69.6	.873	
	60	*p*•1	⧓ *S*	1b	1r				16	83	-19.8	359.5	-31.4	+128.4	.628	
July 8		*2*	*26*	*5*	*3*		*1*	*4*	*61*	*289*	{*+3.7*}	{ *30.9*}		{*+ 0.6*}	*66*	*317*
189.227	57		⧓ ◇	2	1	1		3	21	120	+20.1	91.3	+71.1	-70.1	.946	
G /0526/		*p*	*N*	*1*		*1*		*1*	*3*	*18*	*+22.6*	*95.5*	*+75.3*	*-67.6*	*.967*	
		f	*S*	*1*	*1*			*2*	*18*	*102*	*+19.6*	*90.6*	*+70.4*	*-70.6*	*.942*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1	N	1		1			3	12	+22.5	95.8	+75.6	-67.7	.968	
			N					1	-	6	+22.8	95.0	+74.7	-67.4	.965	
			S)					2	-	5	+20.5	91.6	+71.4	-69.6	.948	→6←6
		2	S	1c	1r				18	97	+19.6	90.5	+70.3	-70.6	.942	
	60		(△)¤	1	1			1	17	71	-19.8	359.2	-21.0	+139.6	.523	*
		p•1	*S*	*1c*	*1r*				*17*	*70*	*-19.8*	*359.2*	*-21.0*	*+139.6*	*.523*	
		(f)•(4)	*N*					*1*	-	*1*	*-20.9*	*0.6*	*-19.7*	*+142.8*	*.522*	
July 9		*2*	*24*	*3*	*2*	*1*		*4*	*38*	*191*	*{+3.8}*	*{ 20.2}*		*{+ 1.0}*	*43*	*198*
190.274 G /0634/	57→	*f•*	(▽) *S'*					(2)	(2)	(23)	+19.4	90.5	+84.1	-70.9	.993	
	60	*p•1*	◇ *S*	2b		1r			11+	73	-20.0	359.2	- 7.1	+163.9	.422	+9+2
July 10		*2*	*23*	*2*		*1*	*2*		*13*	*96*	*{+3.9}*	*{ 6.4}*		*{+ 1.5}*	*20*	*138*
ROT No *1657*																
191.520 G /1228/	60	*p*	◇ *S*	1		1		1	10	54	-19.8	359.2	+ 9.4	-159.3	.434	
		1	S	1		1			10+	50	-19.8	359.2	+ 9.4	-159.2	.433	+9+
			S					1	-	4	-20.4	359.0	+ 9.1	-160.1	.440	
July 11		*1*	*12*	*1*		*1*		*1*	*10*	*54*	*{+4.0}*	*{350.0}*		*{+ 2.0}*	*18*	*97*
192.275 G /0636/	60		△≠◇	1		1		3	10	46	-20.0	359.1	+19.2	-142.5	.510	*
		p	*S*	*1*		*1*		*2*	*10*	*43*	*-19.9*	*359.1*	*+19.2*	*-142.3*	*.509*	
		f•4	*N*					*1*	-	*3*	*-21.5*	*358.5*	*+18.6*	*-145.3*	*.523*	
		1	S	1		1			10+	41	-19.8	359.2	+19.3	-142.1	.509	+9+
			S					1	-	1	-20.2	358.8	+18.9	-143.2	.510	
		3	S					1	-	1	-21.8	357.0	+17.1	-147.8	.515	
July 12		*1*	*12*	*1*		*1*		*3*	*10*	*46*	*{+4.1}*	*{340.0}*		*{+ 2.4}*	*17*	*79*
193.269 G /0628/	60		▽≠◇	3		2	1	2	8	32	-20.9	358.0	+31.3	-130.5	.642	
		p	*S*	*3*		*2*		*1*	*7*	*27*	*-20.9*	*357.9*	*+31.2*	*-130.6*	*.641*	
		f	*N*				*1*	*1*	*1*	*5*	*-20.9*	*358.5*	*+31.8*	*-130.1*	*.645*	
			S					1	-	1	-18.2	360.0	+33.2	-125.3	.641	
		1	S	1		1			3+	14	-19.7	359.3	+32.6	-127.8	.645	+2+
			N				1		1	4	-20.6	358.6	+31.9	-129.6	.643	
		4	N					1	-	1	-22.3	358.2	+31.5	-132.1	.653	
		3	S	2		1			4	12	-22.6	356.2	+29.4	-134.2	.636	
July 13		*1*	*11*	*3*		*2*	*1*	*2*	*8*	*32*	*{+4.2}*	*{326.7}*		*{+ 2.8}*	*12*	*49*
194.248 G /0557/	60→	*p•3*	△ *S*					1	-	1	-23.1	355.9	+42.1	-125.6	.761	
July 14		*1*	*10*					*1*	-	*1*	*{+4.3}*	*{313.8}*		*{+ 3.2}*	*0*	*1*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
195.334 G /0801/ *July 15*	N O S U N S P O T S AT ALL															
196.684 G /1625/ *July 16*	N O S U N S P O T S AT ALL															
197.668 G /1602/ *July 17*	N O S U N S P O T S AT ALL															
198.665 G /1557/ *July 18*	N O S U N S P O T GROUPS LASTING FOR TWO OR MORE DAYS															
199.299 G /0710/ *July 19*	N O S U N S P O T S AT ALL															
200.670 G /1605/	61	⊢ *p*	•1	(◊)	*N*	1			1		(10)	86	+15.2	147.0	-81.8	+75.3	.988	
July 20	*1*		*11*			*1*			*1*		*10*	*86*	*{+4.9}*	*{228.8}*		*{+ 6.1}*		*3 27*
201.283 G /0648/	61	*p*	•1	Ⅱ	*N*	2b			1r		28+	101	+15.2	146.7	-74.0	+75.7	.958	+24+4
July 21	*1*		*11*			*2*			*1*		*28*	*101*	*{+4.9}*	*{220.7}*		*{+ 6.3}*		*16 58*
202.610 G /1439/	61	*p*	•1	Ⅱ	*N*	1c			1r		20+	94	+15.3	146.7	-56.4	+75.0	.834	+19+
	62	↑		▽	▽					2	5	2	11	+19.8	185.8	-17.4	+47.4	.383
		p			*N*					*1*	*3*	*1*	*5*	*+19.8*	*187.4*	*-15.7*	*+44.7*	*.364*
		f•2₁			*S*					*1*	*2*×	*1*	*6*	*+19.7*	*184.4*	*-18.8*	*+49.6*	*.399* →5xxy ×3
				N							2	-	2	+20.0	187.7	-15.4	+43.8	.363
		1		N						1	1	1	3	+19.7	187.2	-15.9	+45.3	.365
	63	⊢ *p*		◊	*S*	1			1	1		6	33	-23.8	130.4	-72.7	+116.0	.973
			1	S						1		1	6	-24.4	131.2	-71.9	+116.7	.971
			3	S		1			1			5	27	-23.7	130.2	-72.9	+115.9	.974
July 22	*3*		*33*			*2*			*1*	*1*	*3*	*5*	*28*	*138*	*{+5.1}*	*{203.1}*		*{+ 6.9}*		*29 139*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
203.506 G /1208/	61	*p•1*	*N*	lb lq					20	88	+15.3	146.5	-44.9	+73.4	.711	
	62		◇-△	1		1		3	4	14	+19.7	185.4	- 5.9	+20.8	.273	
		p•1	*N*					*1*	-	*3*	*+19.9*	*188.1*	*- 3.2*	*+11.6*	*.262*	
		f	*S*	*1*		*1*		*2*	*4*	*11*	*+19.7*	*184.7*	*- 6.6*	*+23.3*	*.275*	
		2_2	S'					1	-	2	+20.0	186.8	- 4.5	+16.1	.268	
		2_1	S	1b		1		1×	4	9	+19.6	184.2	- 7.1	+24.9	.277	×→
	63		▽ ◇	2		2	2		8	33	-24.1	130.6	-60.7	+119.3	.914	
		p	*S*	*2*		*2*	*1*		*7*	*29*	*-23.8*	*130.8*	*-60.4*	*+119.1*	*.912*	
		f•2	*N*				*1*		*1*	*4*	*-25.9*	*128.8*	*-62.5*	*+120.7*	*.929*	
		1	S	1		1	1×		3	10	-24.4	131.5	-59.7	+120.0	.909	×4↓
		3	S	1		1u			4	19	-23.5	130.5	-60.8	+118.7	.914	
	64↑		△ ◇	1		1		4	2	12	+20.3	244.9	+53.6	-68.6	.813	
		p	*N*	*1*		*1*		*1*	*2*	*9*	*+20.1*	*245.5*	*+54.2*	*-68.9*	*.818*	
		f•2	*S*					*3*	-	*3*	*+20.7*	*243.2*	*+51.9*	*-67.7*	*.797*	↑7
			N					1	-	4	+19.8	246.3	+55.0	-69.4	.825	
		1	N'	1		1			2	5	+20.4	244.9	+53.6	-68.5	.813	
July 23		*4*	*44*	*5*	*1*	*4*	*2*	*7*	*34*	*147*	*{+5.1}*	*{191.3}*		*{+ 7.3}*	*45*	*191*
204.323 G /0745/	61	*p•1*	*N*	lc lr					18	84	+15.4	146.3	-34.1	+70.4	.576	*
	62	*f*	*S*					5	-	7	+20.3	184.7	+ 4.2	-14.7	.270	
		2_2	S'					1	-	1	+19.9	186.3	+ 5.8	-20.4	.273	
			(S)					1	-	2	+21.6	185.5	+ 5.0	-16.0	.296	
		2_1	S					3	-	4	+19.7	183.9	+ 3.4	-12.6	.257	
	63		◇-◇	5		4		11	17	48	-24.4	130.2	-50.3	+123.6	.842	
		p	*S*	*3*		*2*		*9*	*11*	*29*	*-23.6*	*131.6*	*-48.9*	*+123.3*	*.828*	
		f	*N*	*2*		*2*		*2*	*6*	*19*	*-25.7*	*128.1*	*-52.4*	*+124.0*	*.863*	
			S					5	-	6	-22.9	132.4	-48.1	+122.9	.819	
		1	S	2		1			6+	11	-24.0	132.3	-48.2	+124.1	.824	+2+2+
			S)					1	-	1	-24.0	131.3	-49.2	+123.6	.833	
		5	S'					1	-	1	-25.3	130.7	-49.8	+124.7	.842	
		3	S	1		1		2×	5	10	-23.3	130.6	-49.9	+122.5	.835	×→
			N					2	-	2	-23.2	128.1	-52.3	+121.4	.854	
		2	N	2		2			6	17	-26.0	128.1	-52.4	+124.3	.864	↑7
	64↓		△ △					3	-	4	+20.3	243.3	+62.9	-69.8	.891	
		p•1	*N'*					*1*	-	*1*	*+20.6*	*245.7*	*+65.3*	*-69.7*	*.908*	
		f	*S*					*2*	-	*3*	*+20.2*	*242.5*	*+62.1*	*-69.8*	*.885*	
			(S)					1	-	1	+19.9	243.2	+62.8	-70.3	.890	
		2	S'					1	-	2	+20.4	242.2	+61.7	-69.6	.882	
	65↑		△ ▽				1	2	1	6	-30.2	160.8	-19.7	+153.1	.646	
		p•1	*S)*				*1*		*1*	*4*	*-30.2*	*161.7*	*-18.8*	*+154.1*	*.641*	
		f•2	*N)*					*2*	-	*2*	*-30.1*	*159.0*	*-21.4*	*+151.1*	*.657*	
July 24		*5*	*54*	*6*	*1*	*4*	*1*	*21*	*36*	*149*	*{+5.2}*	*{180.5}*		*{+ 7.6}*	*49*	*215*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
205.443	61		Δ ◊	1		1		4	15	93	+15.8	145.5	-20.0	+60.6	.380	
G /1038/		*p*•1	*N*	*1c*		*1r*		*1*×	*15*	*87*	*+15.4*	*145.9*	*-19.7*	*+61.0*	*.373*	×←*11*↓*12*
		f	*S*					*3*	–	*6*	*+20.9*	*140.9*	*-24.9*	*+55.0*	*.482*	
		2_1	S					2	–	5	+21.1	140.9	-24.8	+54.5	.483	
		2_2	S)					1	–	1	+19.7	140.6	-25.1	+57.3	.477	
	62		◊ ◊	2		2		1	6	16	+19.8	186.8	+21.2	-53.1	.427	
		p•3	*N*	*1*		*1*		*1*×	*3*	*8*	*+20.1*	*188.1*	*+22.5*	*-53.9*	*.446*	×↑
		f•4_1	*S*	*1*		*1*			*3*+	*8*	*+19.4*	*185.5*	*+19.9*	*-52.2*	*.408*	+2+
	63		◊–◊	2		2	2	5	7	30	-24.1	130.9	-34.8	+132.5	.707	
		p	*S*	*1*		*1*	*2*	*4*	*4*	*23*	*-23.6*	*131.8*	*-33.9*	*+132.5*	*.695*	
		f•2	*N*	*1*		*1*		*1*×	*3*	*7*	*-26.0*	*127.9*	*-37.7*	*+132.4*	*.747*	×→*12*↑*11*
		1	S	1		1			2	5	-23.8	133.1	-32.5	+133.9	.685	
			S					3	–	6	-23.0	132.5	-33.2	+132.4	.685	→7↑6
		3	S				1		1	6	-23.5	131.6	-34.1	+132.2	.696	
		5	S'					1	–	1	-24.7	130.3	-35.4	+132.6	.717	
			S				1		1	5	-23.8	130.1	-35.5	+131.4	.712	
	/65/															INTERMITTENT
July 25		*3*	*35*	*5*		*5*	*2*	*10*	*28*	*139*	*{+5.3}*	*{165.7}*		*{+ 8.1}*	*48*	*243*
206.467	61		Δ ◊	1		1		3	13	69	+16.0	145.1	- 7.0	+31.9	.220	
G /1112/		*p*•1	*N*	*1*		*1*			*13*+	*61*	*+15.4*	*145.7*	*- 6.4*	*+31.5*	*.206*	* +12+
		f	*S*					*3*	–	*8*	*+20.7*	*140.5*	*-11.6*	*+35.3*	*.326*	
		2_1	S'					2	–	7	+20.8	140.6	-11.5	+34.8	.327	
		2_2	S)					1	–	1	+19.6	140.0	-12.1	+38.5	.318	
	62		◊–◊	2		2	2	7	11	33	+20.1	187.9	+35.8	-63.8	.615	
		p	*N*	*1*		*1*	*1*	*4*	*8*	*23*	*+20.2*	*189.1*	*+37.0*	*-64.2*	*.630*	
		f	*S*	*1*		*1*	*1*	*3*	*3*	*10*	*+19.9*	*185.1*	*+33.0*	*-62.7*	*.579*	
		3	N	1		1		1×	7	18	+20.3	189.4	+37.3	-64.2	.634	×→
		5	N				1	3	1	5	+19.8	188.2	+36.1	-64.3	.617	→9↑6
		4_1	S	1		1		1×	2	6	+19.4	185.3	+33.2	-63.6	.579	×←
		4_2	S				1	2	1	4	+20.6	184.9	+32.8	-61.4	.579	
	63		Δ–◊	2		2		6	6	16	-24.1	132.4	-19.8	+147.7	.578	
		p	*S*	*2*		*2*		*4*	*6*	*13*	*-23.7*	*133.1*	*-19.0*	*+148.2*	*.568*	
		f•*(2)*	*N*					*2*	–	*3*	*-25.7*	*129.1*	*-23.0*	*+145.4*	*.621*	
		1	S	1		1		1	3+	6	-23.7	133.6	-18.6	+148.8	.565	+2+
		3	S	1		1		1	3	5	-23.4	133.0	-19.1	+147.8	.565	
			S)					1	–	1	-24.0	132.7	-19.5	+147.9	.575	
		5	S'					1	–	1	-24.5	131.3	-20.8	+146.8	.592	
	65↓		Δ ◊	1		1		1	3	6	-30.3	157.5	+ 5.4	-172.1	.591	
		p•*(1)*	*S*	*1b*		*1*			*3*	*5*	*-30.1*	*158.1*	*+ 6.0*	*-171.2*	*.589*	
		f•*(2)*	*N)*					*1*	–	*1*	*-31.3*	*154.3*	*+ 2.2*	*-176.8*	*.600*	
July 26		*4*	*44*	*6*		*6*	*2*	*17*	*33*	*124*	*{+5.4}*	*{152.1}*		*{+ 8.5}*	*57*	*224*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
207.371	61		Δ ◊	1		1		2	12	64	+15.8	145.3	+ 5.2	-26.0	.202	
G /0855/		p•1	N	1b		1p			12	61	+15.6	145.5	+ 5.4	-27.1	.200	
		f•2₁	S					2	-	3	+19.8	140.9	+ 0.8	-2.9	.249	
	62		▽-◊	2		2	1	3	14	41	+20.0	189.6	+49.5	-68.3	.770	
		p	N	2		2		1	13	36	+20.1	190.1	+50.0	-68.5	.775	
		f	S				1	2	1	5	+20.0	186.0	+45.9	-67.6	.732	
		3	N	1b		1		1×	7	21	+20.3	190.4	+50.3	-68.2	.779	×→
		5	N	1		1			6	15	+19.7	189.7	+49.5	-68.8	.770	
		6	S				1		1	3	+20.0	186.9	+46.8	-67.8	.742	
		4₁₂	S					2	-	2	+20.0	184.7	+44.6	-67.2	.718	
	63		Δ-▽				1	4	1	8	-23.9	132.8	- 7.4	+166.6	.506	
		p	S				1	3	1	7	-23.9	133.3	- 6.9	+167.4	.504	
		f•(2)	N					1	-	1	-24.1	129.3	-10.9	+160.7	.523	
		1	S				1		1	3	-23.9	133.9	- 6.2	+168.6	.502	
		3	S					1	-	2	-23.6	133.4	- 6.7	+167.5	.498	
			S)					1	-	1	-24.1	132.8	- 7.4	+166.6	.509	
		5	S'					1	-	1	-24.2	131.5	- 8.6	+164.5	.515	
July 27		*3*	*34*	*3*		*3*	*2*	*9*	*27*	*113*	{+5.5}	{140.1}		{+ 8.9}	*43*	*191*
208.220	61	p•1	◊ N	1b		1p			15	53	+15.8	145.2	+16.2	-55.8	.327	
G /0517/																
	62		◊-◊	3		3		5	6	29	+20.2	189.4	+60.4	-69.9	.870	
		p	N	2		2		3	4	18	+20.0	191.2	+62.3	-70.3	.886	
		f	S	1		1		2	2	11	+20.4	186.3	+57.4	-69.4	.845	
		3	N	1		1			2	7	+20.5	192.0	+63.1	-69.8	.892	
		5	N	1		1			2	8	+19.5	191.4	+62.5	-70.9	.887	
			N)					2	-	2	+20.1	189.4	+60.4	-70.1	.871	→5
			N					1	-	1	+20.6	188.3	+59.4	-69.3	.863	
		6	S	1		1		1×	2	10	+20.2	186.4	+57.5	-69.6	.846	×→
			S)					1	-	1	+22.1	184.9	+56.0	-67.1	.836	
	63↓	p	Δ S					3	-	3	-23.8	133.7	+ 4.8	-171.1	.498	
		1	S'					1	-	1	-23.8	135.1	+ 6.2	-168.5	.501	
		3	S'					1	-	1	-23.9	133.6	+ 4.7	-171.4	.499	
			S)					1	-	1	-23.8	132.4	+ 3.5	-173.4	.495	
July 28		*3*	*33*	*4*		*4*		*8*	*21*	*85*	{+5.5}	{128.9}		{+ 9.3}	*34*	*134*
209.426	61	p•1	◊ N	1b		1			7	28	+16.1	145.0	+32.1	-68.9	.549	
G /1013/																
	62→		◊ ▽	1		1	1		4	21	+20.2	188.7	+75.8	-70.5	.965	
		p•5	N'				1		1	7	+19.7	193.2	+80.2	-71.0	.982	
		f•6	S	1		1			3	14	+20.4	186.5	+73.6	-70.3	.956	
	66↑	f•	Δ N)					1	-	1	-26.4	122.2	+ 9.3	-164.7	.549	
July 29		*3*	*31*	*2*		*2*	*1*	*1*	*11*	*50*	{+5.6}	{113.0}		{+ 9.8}	*14*	*59*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
210.495	61 ↓	p•1	◇ N	1		1			5+	12	+16.2	145.1	+46.3	-73.0	.728	+3+
G /1153/	66 ↓	f•	△ N					1	-	1	-26.5	122.2	+23.4	-145.9	.636	
July 30		*2*	*20*	*1*		*1*		*1*	*5*	*13*	*{+5.7}*	*{ 98.8}*		*{+10.2}*	*7*	*18*
211.523	67 ↑		△ △					2	-	3	-20.3	132.3	+47.1	-120.8	.802	
G /1233/		*p•*	*S*					*1*	-	*2*	*-19.8*	*133.4*	*+48.2*	*-119.7*	*.810*	
		f•	*N)*					*1*	-	*1*	*-21.2*	*130.0*	*+44.8*	*-122.9*	*.785*	
	68 ↑		△ △					2	-	2	+28.2	115.1	+29.9	-48.2	.591	
		p•(1₅)	*N*					*1*	-	*1*	*+28.4*	*115.7*	*+30.5*	*-48.3*	*.599*	
		f•(2)	*S*					*1*	-	*1*	*+27.9*	*114.5*	*+29.2*	*-48.0*	*.583*	
July 31		*2*	*20*					*4*	-	*5*	*{+5.8}*	*{ 85.2}*		*{+10.6}*	*0*	*7*
212.415	67 ↓		▽ △				1	1	1	5	-20.7	131.1	+57.7	-117.0	.889	
G /0957/		*p•*	*S)*					*1*	-	*1*	*-20.0*	*132.5*	*+59.1*	*-115.8*	*.897*	
		f•	*N*				*1*		*1*	*4*	*-20.9*	*130.7*	*+57.3*	*-117.3*	*.887*	
	68		◇ ◇	2		2		8	9	33	+28.3	116.7	+43.2	-55.9	.729	
		p	*N*	*1*		*1*		*5*	*6*	*19*	*+28.5*	*118.8*	*+45.3*	*-56.6*	*.751*	
		f	*S*	*1*		*1*		*3*	*3*	*14*	*+28.1*	*113.7*	*+40.2*	*-54.9*	*.699*	
		1_1	N	1		1			6	8	+28.5	119.4	+45.9	-56.9	.756	
		1_{2-5}	N					4	-	10	+28.6	118.6	+45.1	-56.4	.750	→22↑14
		1_6	N					1	-	1	+27.5	116.9	+43.4	-57.1	.728	train
			S					1	-	2	+29.2	115.3	+41.9	-54.3	.720	
		2	S	1		1		2	3+	12	+27.9	113.4	+39.9	-55.0	.695	+2+
	69 ↑		△ △					2	-	2	+21.6	115.3	+41.9	-64.6	.690	
		p•1	*N'*					*1*	-	*1*	*+21.3*	*116.4*	*+42.9*	*-65.3*	*.701*	
		f•2	*S'*					*1*	-	*1*	*+21.8*	*114.2*	*+40.8*	*-63.9*	*.678*	
Aug 1		*3*	*31*	*2*		*2*	*1*	*11*	*10*	*40*	*{+5.8}*	*{ 73.4}*		*{+11.0}*	*13*	*53*
213.134	68		◇ ◇	2		2		3	12	70	+28.7	117.7	+53.8	-59.0	.827	
K /0313/		*p•1_{1-6}*	*N*	*1*		*1*			*9*	*44*	*+28.9*	*120.2*	*+56.2*	*-59.4*	*.848*	
		f	*S*	*1*		*1*		*3*	*3*	*26*	*+28.3*	*113.6*	*+49.7*	*-58.4*	*.790*	
		2_2	S					3	-	8	+28.7	113.7	+49.8	-57.9	.793	
		2_1	S	1		1			3	18	+28.1	113.5	+49.6	-58.6	.789	
	69 ↓		△ ◇	1		1		1	2	11	+21.4	117.1	+53.2	-67.7	.808	
		p•1	*N'*	*1*		*1*			*2*	*10*	*+21.4*	*117.4*	*+53.5*	*-67.7*	*.811*	
		f•2	*S'*					*1*	-	*1*	*+21.4*	*114.4*	*+50.5*	*-67.2*	*.782*	
Aug 2		*2*	*22*	*3*		*3*		*4*	*14*	*81*	*{+5.9}*	*{ 63.9}*		*{+11.2}*	*16*	*91*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
214.146	68→	Δ ◊		1		1		1	7	38	+28.9	119.8	+69.3	-61.2	.935	
K /0330/		$p•1_{1-6}$	*N*	*1*		*1*			*7*	*35*	*+29.0*	*120.3*	*+69.8*	*-61.2*	*.938*	
		$f•(2_1)$	*S*					*1*	-	*3*	*+28.1*	*114.0*	*+63.5*	*-61.6*	*.900*	
	70→	p•1 ▮	*N*	2b	1q				43	268	+24.4	332.1	-78.3	+66.3	.976	*
Aug 3		*2*	*23*	*3*	*1*	*1*		*1*	*50*	*306*	*{+6.0}*	*{ 50.5}*		*{+11.6}*	*24*	*144*
215.617	70	◊-▮		6	1	2	1	5	51	283	+24.2	330.7	-60.4	+65.6	.871	
G /1448/		*p*	*N*	*5*	*1*	*1*		*3*	*44*	*234*	*+24.1*	*331.4*	*-59.7*	*+65.6*	*.866*	
		f	*S*	*1*		*1*	*1*	*2*	*7*	*49*	*+24.4*	*327.7*	*-63.4*	*+65.7*	*.895*	
		1_{1-3}	N	3b	1p				35	211	+23.9	331.5	-59.6	+65.8	.865	
			N)					1	-	2	+23.1	330.5	-60.6	+66.9	.874	
		3_1	N	2		1		1×	9	18	+26.8	330.3	-60.8	+62.6	.879	×2↓
		1_4	N					1	-	3	+24.1	329.9	-61.2	+65.8	.879	
			S					1	-	3	+25.3	329.6	-61.5	+64.5	.883	
		6_1	S				1		1	5	+26.2	327.8	-63.3	+63.7	.896	
			S					1	-	1	+23.2	327.7	-63.4	+67.1	.895	
		4_1	S	1		1			6	40	+24.1	327.6	-63.5	+66.0	.896	
		U 1_2	*N*	*1*					*12*	-	*+24.2*	*331.7*	*-59.4*	*+65.4*	*.865*	
		U 1_1	*N*	*1*					*18*	-	*+23.6*	*331.6*	*-59.5*	*+66.1*	*.865*	
		U 1_3	*N*	*1*					*5*	-	*+24.3*	*330.6*	*-60.5*	*+65.5*	*.874*	
Aug 4		*1*	*16*	*6*	*1*	*2*	*1*	*5*	*51*	*283*	*{+6.1}*	*{ 31.1}*		*{+12.2}*	*50*	*277*
216.545	70	▮‡▮	δ	13	2	4	4	1	90	498	+24.6	329.2	-49.6	+63.1	.779	
G /1304/		*p*	*N*	*7*	*1*	*2*	*2*		*56*	*237*	*+24.5*	*331.2*	*-47.6*	*+62.7*	*.759*	
		f	*S*	*6*	*1*	*2*	*2*	*1*	*34*	*261*	*+24.6*	*327.4*	*-51.4*	*+63.5*	*.797*	
		1_{1-3}	N	3b	1p				28	144	+23.6	331.4	-47.4	+63.8	.754	
		3_1	N	1b		1p	1×		15	63	+26.4	331.3	-47.5	+60.2	.763	×3←
		1_4	N				1		1	7	+23.7	330.0	-48.8	+64.0	.769	
		5_{1-3}	N	3b		1u			12+	(23	+25.4	329.6	-49.2	+62.0	.776	+5+5+2
		4_{12}	S	3b	1u			1	22+	(202	+24.2	327.5	-51.3	+64.0	.795	+10+8+3+
		6_1	S	2b		1p	1×		6	36	+26.6	327.3	-51.5	+61.1	.801	×6↓
			S				1		1	9	+25.6	326.8	-52.0	+62.5	.804	
		4_3	S	1		1			5	14	+25.0	326.5	-52.3	+63.3	.805	
		1_1	*N*	*1*					*19*	-	*+23.5*	*331.5*	*-47.4*	*+64.0*	*.753*	
		1_2	*N*	*1*					*7*	-	*+23.9*	*331.4*	*-47.5*	*+63.4*	*.755*	
		1_3	*N*	*1*					*2*	-	*+23.7*	*330.5*	*-48.4*	*+63.9*	*.764*	
Aug 5		*1*	*22*	*13*	*2*	*4*	*4*	*1*	*90*	*498*	*{+6.1}*	*{ 18.8}*		*{+12.6}*	*114*	*624*
217.268	70	▮‡▮	δ	11	2	4	6	18	92	486	+24.7	329.2	-40.0	+59.8	.679	
G /0626/		*p*	*N*	*5*	*1*	*2*	*3*	*6*	*52*	*239*	*+24.3*	*331.0*	*-38.2*	*+59.6*	*.657*	
		f	*S*	*6*	*1*	*2*	*3*	*12*	*40*	*247*	*+25.1*	*327.5*	*-41.8*	*+60.0*	*.699*	
		3_1	N	2b		1		1×	14	57	+26.1	331.4	-37.9	+56.7	.662	×4←
		1_{12}	N	1b	1q				28	146	+23.6	331.2	-38.0	+60.5	.652	
		3_2	N					2	-	5	+25.8	330.2	-39.0	+57.8	.673	
		1_{34}	N				2		2	11	+23.5	330.0	-39.3	+61.1	.665	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		5_{1-3}	N	2		1u			7	(10	+24.9	329.5	-39.7	+59.3	.676	
		7	N				1	3	1	10	+23.4	329.0	-40.3	+61.7	.676	
		6_2	S	2		1u			11+	(94	+25.4	328.6	-40.7	+59.0	.689	+9+2
			S)					3	-	8	+26.8	328.4	-40.9	+57.3	.697	→7
		6_1	S					2	-	3	+27.0	327.6	-41.6	+57.3	.706	
		4_{12}	S	3	1u				21+	(98	+24.4	327.4	-41.9	+61.0	.698	+9+6+5+
			S				2	2	2	12	+25.9	326.9	-42.4	+59.1	.709	→8yyxx
		4_3	S	1		1		2×	5	20	+24.8	326.0	-43.3	+61.0	.714	$\times_4$←
		8_1	S					1	-	1	+24.9	323.5	-45.8	+61.7	.741	
		8_2	S				1	2	1	11	+26.0	323.0	-46.3	+60.3	.749	↑6yxx
Aug 6		*1*	*24*	*11*	*2*	*4*	*6*	*18*	*92*	*486*	{+6.2}	{ 9.3}		{+12.8}	*136*	*713*

ROT No
1658

218.308	70		◇⧺Ⅱ	δ	14	1	7	5	9	88	466	+24.5	328.8	-26.7	+51.5	.523	
G /0724/		*p*		*N*	*6*	*1*	*3*	*1*	*3*	*47*	*279*	*+24.2*	*330.4*	*-25.1*	*+50.6*	*.503*	
		f		*S*	*8*		*4*	*4*	*6*	*41*	*187*	*+24.9*	*326.5*	*-29.0*	*+52.9*	*.554*	
			(N)						1	-	2	+24.5	332.9	-22.6	+47.4	.477	
		3_1	N	2		1			8+	46	+25.8	331.3	-24.2	+47.1	.506	+6+2
		1_{12}	N	1c	1r				30	153	+23.4	330.8	-24.7	+51.6	.491	
		3_2	N	1		1a			3+	24	+25.5	329.9	-25.5	+48.9	.519	+2+
		7	N					2	-	7	+23.1	328.9	-26.6	+53.8	.513	
		5_{1-3}	N	2		1u			5	(44	+24.6	328.6	-26.9	+51.6	.527	
		6_2	S	1		1			5	52	+25.8	328.3	-27.2	+49.9	.539	
		4_2	S				1	1×	1	(17	+24.0	327.7	-27.8	+53.4	.533	×↓
		3_3	N				1		1	3	+27.0	327.4	-28.1	+49.0	.559	
		4_1	S	3		1			12+	52	+24.7	326.8	-28.7	+53.0	.548	+6+4+2
		4_3	S	3		1			9	29	+24.6	325.3	-30.2	+54.3	.565	
			S)					3	-	3	+25.6	325.2	-30.3	+52.9	.573	↑10
		8_3	S	1		1			11	17	+24.2	324.5	-31.0	+55.5	.572	
		8_1	S'				2	2	2	14	+24.4	322.9	-32.6	+56.3	.592	↑5yxy
		8_2	S'				1		1	3	+26.4	322.5	-33.0	+53.5	.609	
Aug 7		*1*	*26*	*14*	*1*	*7*	*5*	*9*	*88*	*466*	{+6.2}	{355.5}		{+13.2}	*149*	*794*

219.442	70		◇⧺Ⅱ	δ	12	1	8	3	9	58	347	+24.3	328.4	-12.1	+31.2	.368	
G /1037/		*p*		*N*	*5*	*1*	*2*	*2*	*1*	*37*	*193*	*+23.7*	*330.0*	*-10.5*	*+29.0*	*.346*	
		f		*S*	*7*		*6*	*1*	*8*	*21*	*154*	*+25.1*	*326.4*	*-14.1*	*+33.9*	*.396*	
		1_{12}	N	1c	1r					25	138	+23.1	330.4	-10.1	+29.0	.335	
		3_{12}	N	2		1n			6+	27	+25.4	329.9	-10.6	+26.8	.370	+2+2+
		7	N					1	-	1	+23.3	328.6	-11.9	+32.7	.351	
		5_{12}	N	2		1			4	(15	+25.1	328.4	-12.1	+30.2	.377	
		3_3	N				1		1	2	+26.6	327.9	-12.6	+29.1	.402	
		6_2	S	2		1			5	(49	+25.9	327.6	-12.9	+30.7	.396	
		5_3	N				1		1	(10	+24.2	327.7	-12.8	+33.0	.372	
		4_2	S	1		1			5	(43	+24.6	327.5	-13.0	+33.0	.378	
		4_1	S	1		1	1×		4	25	+24.9	326.1	-14.4	+34.9	.395	$\times_3$↑
		4_3	S	2		2			4	10	+25.3	325.1	-15.4	+36.2	.409	
		8_3	S'	1		1		1×	3+	14	+24.8	324.1	-16.4	+38.5	.413	+2+ $\times_3$→
		8_1	S'					5	-	8	+24.8	323.0	-17.5	+40.3	.424	
			S)					1	-	2	+23.2	322.7	-17.8	+43.6	.409	
		8_2	S					1	-	3	+26.2	322.5	-18.0	+38.7	.445	
Aug 8		*1*	*23*	*12*	*1*	*8*	*3*	*9*	*58*	*347*	{+6.3}	{340.5}		{+13.7}	*108*	*645*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
220.437	70		◇≠Ⅱ δ	5	1	4	7	15	45	276	+24.2	328.4	+ 1.1	-3.4	.310	
G /1030/	*p*		*N*	*2*	*1*	*1*	*2*	*6*	*29*	*166*	*+23.4*	*329.8*	*+ 2.5*	*-7.5*	*.296*	
	f		*S*	*3*		*3*	*5*	*9*	*16*	*110*	*+25.4*	*326.3*	*- 1.0*	*+2.9*	*.330*	
	1_{12}	N		1c	1r				24	133	+23.0	330.1	+ 2.7	-8.7	.291	
	3_{12}	N						1	-	2	+25.4	329.8	+ 2.5	-6.8	.330	
	3_3	N					1		1	3	+26.1	329.2	+ 1.9	-5.0	.340	
	5_{12}	N		1		1		2×	3	19	+25.0	328.4	+ 1.0	-2.9	.321	×3↓
	7	N						1	-	1	+23.1	328.3	+ 0.9	-2.9	.289	
	5_3	N					1	2	1	8	+24.0	327.6	+ 0.3	-0.8	.305	
	4_2	S		1		1		2×	3	24	+24.5	327.2	- 0.1	+0.4	.314	×3←
	6_2	S		1		1			6+	54	+26.0	327.1	- 0.2	+0.6	.337	+3+
		S					1		1	3	+26.0	326.2	- 1.2	+3.2	.338	
	4_{13}	S					2		2	6	+25.4	325.4	- 2.0	+5.4	.329	
	8_3	S		1		1	1×	2	3	14	+25.0	324.1	- 3.3	+9.1	.326	×5→7yxs
	8_1	S						5	-	6	+24.4	323.3	- 4.1	+11.7	.319	→10+7
	8_2	S					1		1	3	+26.4	322.7	- 4.7	+12.0	.353	
Aug 9	*1*	*20*		*5*	*1*	*4*	*7*	*15*	*45*	*276*	*{+6.4}*	*{327.4}*		*{+14.0}*	*86*	*525*
221.543	70		◇≠Ⅱ δ	6	1	5	2	10	33	219	+23.9	328.5	+15.8	-39.2	.395	
G /1303/	*p*		*N*	*4*	*1*	*3*	*2*	*1*	*28*	*157*	*+23.4*	*329.3*	*+16.6*	*-41.4*	*.398*	
	f		*S*	*2*		*2*		*9*	*5*	*62*	*+25.0*	*326.4*	*+13.7*	*-33.8*	*.389*	
	1_{12}	N		1c	1r				19	123	+23.0	329.6	+16.9	-42.7	.396	
	3_3	N'						1	-	1	+25.9	329.6	+16.9	-37.7	.429	
	5_{412}	N		2		2n			5	(24	+25.4	328.3	+15.5	-36.4	.409	
		N					1		1	2	+24.2	327.7	+14.9	-37.3	.390	
	5_5	N					1		1	(3	+24.5	327.5	+14.7	-36.5	.391	
	5_3	N		1		1			2	4	+23.8	327.5	+14.8	-37.7	.383	
		S)						1	-	2	+26.0	327.4	+14.6	-33.8	.409	
	6_2	S		1		1n			2	(24	+25.6	326.9	+14.2	-33.7	.400	
	4_2	S		1		1n			3	(28	+24.4	326.8	+14.1	-35.4	.385	
		S)						1	-	1	+24.6	326.3	+13.6	-34.1	.382	
	8_{13}	S						6	-	6	+24.7	323.5	+10.8	-28.5	.359	→7+8
		(S)						1	-	1	+26.1	321.7	+ 9.0	-22.5	.367	
	71 ↑	◇-◇		3		2	1	3	11	28	-16.9	8.7	+56.0	-113.8	.868	
	p●1		*S*	*1*		*1*	*1×*		*7*	*16*	*-16.7*	*9.9*	*+57.2*	*-113.1*	*.877*	×6←8
	f		*N*	*2*		*1*		*3*	*4*	*12*	*-17.2*	*7.1*	*+54.3*	*-114.7*	*.856*	
		N						1	-	1	-15.6	8.7	+55.9	-112.3	.865	
		N						1	-	1	-16.6	7.7	+55.0	-113.8	.860	
	2	N		2		1		1×	4	10	-17.4	6.9	+54.1	-115.0	.855	×↓
	72 ↑	Δ Δ						2	-	2	+18.2	238.8	-74.0	+72.9	.956	*
	p●		*N)*					*1*	-	*1*	*+18.4*	*241.2*	*-71.6*	*+72.7*	*.944*	
	f●		*S)*					*1*	-	*1*	*+18.0*	*236.4*	*-76.3*	*+73.1*	*.967*	
Aug 10	*3*	*39*		*9*	*1*	*7*	*3*	*15*	*44*	*249*	*{+6.4}*	*{312.7}*		*{+14.4}*	*71*	*431*
222.577	70		◇≠Ⅱ δ	3	1	2	2	16	32	159	+23.6	328.7	+29.6	-55.7	.550	
G /1351/	*p*		*N*	*2*	*1*	*1*	*2*	*9*	*28*	*139*	*+23.3*	*329.1*	*+30.0*	*-56.5*	*.554*	
	f		*S*	*1*		*1*		*7*	*4*	*20*	*+25.3*	*325.4*	*+26.3*	*-50.1*	*.525*	
	1_{12}	N		1b	1r				24	116	+23.0	329.4	+30.3	-57.3	.555	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		5_{412}	N				1	4	1	10	+25.4	328.5	+29.4	-52.7	.560	
			N					1	-	1	+25.0	328.1	+29.0	-53.1	.552	
			N				1	1	1	3	+24.9	327.5	+28.5	-52.8	.545	
			N)					2	-	2	+24.5	327.2	+28.2	-53.2	.539	
		6_2	S					1	-	2	+25.6	327.2	+28.1	-51.3	.547	
		5_3	N'					1	-	1	+23.9	327.0	+27.9	-54.0	.532	
		5_5	N]	1		1			2	(6]	+24.8	326.8	+27.8	-52.3	.537	
		4_2	S]	1		1			4	(10]	+24.6	326.4	+27.3	-52.3	.530	
		6_3	S					2	-	3	+25.7	325.9	+26.9	-50.1	.533	
			S)					4	-	5	+26.5	322.4	+23.4	-45.3	.501	→S↑6
	71→		Δ Δ					2	-	3	-17.3	9.5	+70.5	-110.3	.960	
		p•1		*S*				*1*	-	*2*	*-17.1*	*10.8*	*+71.8*	*-109.8*	*.966*	
		f•2		*N'*				*1*	-	*1*	*-17.8*	*7.0*	*+67.9*	*-111.3*	*.948*	
	72	*p•1*	Δ	*N*				1	-	1	+18.6	240.5	-58.6	+72.1	.852	
	73→	*p•1*	▽	*N*			1		1	14	+30.6	214.5	-84.6	+60.0	.991	
Aug 11		*4*	*45*	*3*	*1*	*2*	*3*	*19*	*33*	*177*	*{+6.5}*	*{299.1}*		*{+14.8}*	*54*	*272*
223.661 G /1552/	70		◊-Ⅱ	2	1	1	1	4	27	143	+23.4	328.5	+43.8	-63.3	.714	
		p		*N*	*1*	*1*		*1*	*25*	*134*	*+23.2*	*328.7*	*+44.0*	*-63.6*	*.715*	
		f		*S*	*1*		*1*	*4*	*2*	*9*	*+25.6*	*325.5*	*+40.8*	*-59.2*	*.688*	
		1_{12}	N	1c	1r				24	131	+23.2	328.8	+44.1	-63.7	.716	
		6_2	S'					1	-	1	+25.2	327.1	+42.4	-60.3	.704	
		5_5	N				1		1	3	+24.7	325.9	+41.2	-60.6	.689	
		6_3	S	1		1		2×	2	7	+25.8	325.6	+40.9	-58.9	.690	×3↓
		(8_1)	S					1	-	1	+24.5	323.4	+38.7	-59.8	.660	
	72	*p•1*	◊	*N*	1		1		2	7	+19.1	241.8	-42.9	+69.0	.691	
	73	*p*	◊	*N*	1		1	1	4	16	+30.6	214.8	-69.9	+59.7	.937	
		1_1	N	1		1			4	14	+30.7	214.9	-69.8	+59.6	.937	
		1_2	N					1	-	2	+30.1	214.3	-70.4	+60.2	.940	
Aug 12		*3*	*34*	*4*	*1*	*3*	*1*	*5*	*33*	*166*	*{+6.5}*	*{284.7}*		*{+15.2}*	*44*	*222*
224.286 G /0652/	70	*p•*1_{12}	Ⅱ	*N*	1c	1r			24	120	+23.4	328.4	+52.3	-65.6	.800	
	72	*p•1*	Δ	*N'*				1	-	2	+19.5	242.2	-34.3	+65.5	.586	
	73	*p*	◊	*N*	1		1	2	3	19	+30.4	214.4	-62.0	+59.1	.890	
		1_2	N				1		1	6	+30.2	214.7	-61.8	+59.3	.888	
		1_1	N	1		1			2	10	+30.7	214.5	-61.9	+58.7	.890	
			N					2	-	3	+29.8	213.7	-62.8	+59.9	.894	→9
	74↑		◊ ◊	2		2	1	3	9	36	+26.6	212.7	-63.8	+63.5	.898	
		p•1_1		*N*	*1*		*1*	*1+*	*5*	*19*	*+26.7*	*213.9*	*-62.6*	*+63.2*	*.890*	↑9xsy
		f		*S*	*1*		*1*	*2*	*4*	*17*	*+26.4*	*211.3*	*-65.2*	*+63.8*	*.908*	+5 ×2
			S)					2	-	3	+27.1	211.5	-65.0	+63.1	.907	→6↑6
		2	S	1		1			4	14	+26.3	211.2	-65.2	+64.0	.908	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	75	p•1	◇ N	1		1			6	31	+19.2	193.3	-83.2	+71.5	.989	*
Aug 13		*5 54*		*5*	*1*	*4*	*2*	*6*	*42*	*208*	*{+6.6}*	*{276.5}*		*{+15.4}*	*41*	*205*
225.535 G /1251/	70	$p•1_{12}$	⧖ N	lc	lr				25	123	+23.7	328.5	+68.6	-67.1	.927	
	72		▽ △				1	2	1	5	+19.7	236.6	-23.3	+57.6	.443	
		p•	*N*					*1*	*-*	*1*	*+19.5*	*237.9*	*-22.0*	*+56.9*	*.424*	
		f•2	*S*				*1*	*1*	*1*	*4*	*+19.8*	*236.3*	*-23.6*	*+57.8*	*.448*	
	73	$p•1_{12}$	◇ N	1		1			3+	15	+30.4	214.2	-45.8	+55.0	.757	+2+
	74		◇ ◇	3		2		1	13	60	+26.5	214.7	-45.3	+59.6	.739	
		p	*N*	*2*		*1*		*1*	*9*	*52*	*+26.5*	*215.4*	*-44.6*	*+59.4*	*.732*	
		f•2	*S*	*1*		*1*			*4*	*8*	*+26.8*	*210.1*	*-49.9*	*+60.9*	*.784*	
		1_1	N	2		1			9	49	+26.5	215.5	-44.5	+59.4	.731	
		1_2	N					1	-	3	+26.5	214.3	-45.7	+59.9	.742	
	75	p•1	◇ N	lc		la			14	49	+19.1	193.4	-66.6	+72.0	.914	
Aug 14		*5 55*		*6*	*1*	*4*	*1*	*3*	*56*	*252*	*{+6.6}*	*{260.0}*		*{+15.8}*	*53*	*241*
226.568 G /1337/	70	$p•1_{12}$	⧖ N	lc	lr				16	110	+23.7	327.6	+81.3	-67.0	.984	
	72		△ ▽				2	3	2	15	+20.0	238.5	- 7.8	+28.7	.268	
		p•3	N					2	-	*8*	*+20.3*	*240.6*	*- 5.7*	*+21.6*	*.255*	→7
		f	*S*				*2*	*1*	*2*	*7*	*+19.6*	*236.0*	*-10.3*	*+36.8*	*.283*	
		2	S				2		2	6	+19.8	236.1	-10.2	+36.1	.284	→5
			S)					1	-	1	+18.6	235.4	-10.9	+40.8	.276	
	73	*p*	◇ N	2		2	1		9	16	+30.5	213.1	-33.2	+48.2	.635	
		1_{12}	N	1		1	1×		7	11	+30.7	213.5	-32.8	+47.7	.632	$×_3$↓
			N	1		1			2	5	+30.1	212.2	-34.1	+49.4	.641	
	74		△ ◇	2		1	2	4	11	49	+26.8	215.2	-31.1	+52.1	.586	
		p	*N*	*2*		*1*	*1*	*2*	*10*	*42*	*+26.8*	*216.0*	*-30.3*	*+51.6*	*.577*	
		f•2	*S*				*1*	*2×*	*1*	*7*	*+26.9*	*210.4*	*-35.9*	*+55.1*	*.641*	→12yxx$×_3$
		1_1	N	2		1			9+	34	+26.8	216.3	-30.0	+51.4	.574	+6+2+
		1_2	N				1		1	4	+26.6	215.5	-30.8	+52.2	.582	
			N)					2	-	4	+26.9	214.4	-31.9	+52.5	.597	
	75	p•1	◇ N	2		1			13+	43	+19.2	193.3	-53.0	+70.9	.801	+9+4
Aug 15		*5 54*		*7*	*1*	*4*	*5*	*7*	*51*	*233*	*{+6.7}*	*{246.3}*		*{+16.2}*	*55*	*224*
227.402 G /0939/	72		◇–◇	4		2	1	2	18	47	+19.8	240.9	+ 5.6	-21.6	.247	
		p•3	*N*	*3*		*1n*			*12+*	*27*	*+20.2*	*242.1*	*+ 6.8*	*-25.4*	*.260*	*+4+3+3+*
		f	*S*	*1*		*1*	*1*	*2*	*6*	*20*	*+19.4*	*239.2*	*+ 4.0*	*-16.5*	*.230*	
		4_1	S	1		1	1×		6	18	+19.3	239.6	+ 4.4	-18.3	.230	$×_4$→7
		2	S'					2	-	2	+19.9	235.3	+ 0.1	-0.3	.230	→7

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	73 ↓	$p\bullet 1_{12}$	▽ *N*				2		3	10	+30.8	212.7	-22.6	+38.4	.533	
	74		△ ◇	2		1		4	14	33	+27.0	215.0	-20.2	+40.9	.471	
		$p\bullet 1_{12}$	*N*	*2b*		*1*			*14+*	*26*	*+27.0*	*216.3*	*-18.9*	*+39.4*	*.458*	*+7+5+*
		$f\bullet 2$	*S*					*4*	-	*7*	*+27.0*	*210.3*	*-25.0*	*+46.6*	*.520*	*→6↑5*
	75	$p\bullet 1$	◇ *N*	1		1			3+	14	+19.1	193.1	-42.2	+69.0	.682	+2+
	76 ↑		△ ▽				1	2	1	5	+22.2	176.2	-58.9	+68.0	.856	
		$p\bullet 1$	*N*				*1*	*1×*	*1*	*4*	*+22.4*	*176.6*	*-58.7*	*+67.8*	*.855*	*×↓*
		$f\bullet 2_1$	*S'*					*1*	-	*1*	*+21.5*	*175.6*	*-59.7*	*+69.0*	*.862*	
Aug 16		*6*	*64*	*7*		*4*	*4*	*8*	*39*	*109*	*{+6.7}*	*{235.3}*		*{+16.5}*	*70*	*192*
228.599	72		◇–◇	2		2	3	3	7	26	+19.5	241.6	+22.1	-57.0	.424	
G /1423/		p	*N*	*1*		*1*	*1*	*1*	*3*	*12*	*+19.6*	*244.3*	*+24.8*	*-59.5*	*.461*	
		f	*S*	*1*		*1*	*2*	*2*	*4*	*14*	*+19.4*	*239.2*	*+19.8*	*-54.9*	*.392*	
		3_1	N	1		1	1×		3	11	+19.6	244.4	+24.9	-59.6	.462	×5→4
		3_2	N					1	-	1	+19.8	243.3	+23.8	-58.3	.449	
		4_2	S					1	-	1	+20.0	241.1	+21.6	-55.7	.421	×8
		4_1	S	1		1	2×	1	4	13	+19.3	239.1	+19.7	-54.8	.390	→8ysyx
	74		△–◇	2		2		4	8	31	+26.9	215.3	- 4.1	+10.5	.354	
		p	*N*	*2*		*2*		*1*	*8*	*27*	*+26.8*	*216.0*	*- 3.4*	*+9.0*	*.350*	
		$f\bullet 2$	*S'*					*3*	-	*4*	*+27.6*	*210.9*	*- 8.6*	*+20.3*	*.383*	*→14*
		1_{12}	N	1b		1		1×	6	22	+26.9	216.7	- 2.7	+ 7.1	.349	×←
		3	N'	1b		1			2	5	+26.3	212.7	- 6.7	+17.4	.353	
	75 ↓	$p\bullet 1$	△ *N*					1	-	1	+18.5	192.9	-26.5	+63.2	.477	
	76		△ ◇	1		1	3	2	8	16	+21.9	177.2	-42.3	+65.1	.690	
		p	*N*	*1*		*1*		*2*	*5*	*9*	*+21.8*	*178.3*	*-41.2*	*+65.0*	*.677*	
		$f\bullet 2_1$	*S*				*3*		*3*	*7*	*+22.1*	*175.8*	*-43.7*	*+65.2*	*.707*	*→5*
		1	N	1		1			5	7	+21.8	178.5	-41.0	+64.9	.675	
			N					2	-	2	+21.7	177.6	-41.8	+65.2	.685	↑5
	77 ↦	$p\bullet 1$	◇ *S*	1		1			3	12	-27.3	154.2	-65.3	+121.8	.950	
Aug 17		*5*	*53*	*6*		*6*	*6*	*10*	*26*	*86*	*{+6.8}*	*{219.5}*		*{+16.9}*	*41*	*137*
229.445	72		◇ ◇	2		2	1	5	6	18	+19.7	242.2	+33.9	-65.2	.579	
G /1041/		p	*N*	*1*		*1*	*1*	*1*	*4*	*10*	*+19.5*	*244.1*	*+35.8*	*-66.4*	*.604*	
		f	*S*	*1*		*1*		*4*	*2*	*8*	*+19.8*	*239.7*	*+31.4*	*-63.7*	*.549*	
		3_1	N				1	1	1	2	+19.6	245.0	+36.7	-66.6	.616	
		3_2	N	1		1			3	8	+19.5	243.9	+35.6	-66.4	.601	
		4_2	S	1		1		2×	2	6	+19.5	240.3	+32.0	-64.6	.555	×→6
			S)					1	-	1	+20.4	239.3	+31.0	-62.5	.546	
			S)					1	-	1	+21.1	236.5	+28.2	-59.4	.514	
	74		◇–◇	2		2	3	2	7	26	+27.2	213.4	+ 5.2	-12.9	.361	
		p	*N*	*1*		*1*	*3*	*1*	*5*	*17*	*+26.8*	*215.3*	*+ 7.1*	*-17.8*	*.362*	
		$f\bullet 2$	*S*	*1*		*1*		*1×*	*2*	*9*	*+27.8*	*209.8*	*+ 1.5*	*-3.8*	*.361*	*×3→5*

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	OF m	SPOTS s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_{12}	N	1		1	2×		4	13	+26.9	215.9	+ 7.7	-19.1	.365	×6
			N)					1	-	1	+28.0	214.5	+ 6.2	-14.8	.375	
		3	N				1		1	3	+26.2	213.1	+ 4.9	-12.9	.343	
	76		▽ ◇	1		1	4	2	7	24	+21.7	177.2	-31.1	+60.4	.554	
		p•1	*N*	*1*		*1*	*2*		*5*	*13*	*+21.4*	*178.7*	*-29.5*	*+59.9*	*.533*	
		f	*S*				*2*	*2*	*2*	*11*	*+22.0*	*175.4*	*-32.9*	*+60.9*	*.579*	
		2_2	S					1	-	1	+22.4	176.2	-32.0	+59.8	.570	
		2_1	S				2	1	2	10	+22.0	175.3	-33.0	+61.0	.580	
	77	*p•1*	◇ *S*	1		1			5+	13	-27.3	154.6	-53.7	+125.8	.886	+4+
Aug 18		*4*	*43*	*6*		*6*	*8*	*9*	*25*	*81*	*{+6.8}*	*{208.3}*		*{+17.1}*	*39*	*130*
230.570 G /1341/	72		◇–◇	2		2		2	9	34	+19.2	241.2	+47.8	-70.3	.745	
		p	*N*	*1*		*1*		*2*	*3*	*13*	*+19.6*	*244.8*	*+51.4*	*-70.4*	*.784*	
		f•4_2	*S*	*1*		*1*			*6*	*21*	*+19.0*	*239.0*	*+45.6*	*-70.2*	*.721*	
			N					1	-	1	+20.4	245.3	+51.9	-69.4	.790	
		3_{12}	N	1		1			3	11	+19.5	244.9	+51.5	-70.5	.785	
			N					1	-	1	+19.9	242.6	+49.2	-69.7	.762	
	74	*p*	◇ *N*	1		1	1		5	17	+27.0	214.9	+21.5	-42.7	.481	
		1_{12}	N	1		1			4+	12	+27.3	215.3	+21.9	-42.8	.489	+2+
		3	N				1		1	5	+26.3	213.8	+20.4	-42.6	.462	
	76		△ ▽				1	1	1	5	+21.5	178.7	-14.8	+42.6	.350	
		p•1	*N*				*1*		*1*	*4*	*+21.3*	*179.3*	*-14.1*	*+41.8*	*.341*	
		f•2_2	*S*					*1*	-	*1*	*+22.1*	*176.1*	*-17.4*	*+45.9*	*.387*	
	77 +	*p•1*	△ *S*					2	-	4	-27.2	154.3	-39.1	+133.7	.778	
Aug 19		*4*	*42*	*3*		*3*	*2*	*5*	*15*	*60*	*{+6.9}*	*{193.4}*		*{+17.5}*	*23*	*89*
231.586 G /1405/	72		◇–◇	5		4	1	6	33	168	+19.9	241.8	+61.8	-71.1	.878	
		p	*N*	*2*		*2*		*4*	*16*	*74*	*+19.7*	*244.2*	*+64.2*	*-71.4*	*.897*	
		f	*S*	*3*		*2*	*1*	*2*	*17*	*94*	*+20.1*	*239.9*	*+59.9*	*-70.8*	*.863*	
		[3_{12}	N	1		1u		2×	3	(14]	+19.6	244.7	+64.8	-71.5	.900	×+
		[5	N	1		1u			13	(56]	+19.7	244.1	+64.1	-71.4	.896	
			N)					1	-	2	+17.9	243.7	+63.7	-73.4	.892	
			N					1	-	2	+20.5	243.5	+63.5	-70.4	.891	
		6_0	S					1	-	2	+21.1	242.4	+62.4	-69.8	.883	
		6	S	2b		1n			13+	75	+20.4	240.0	+60.0	-70.4	.864	+10+2+
			S)					1	-	2	+19.1	239.6	+59.6	-71.9	.860	
		4_2	S	1		1	1×		4	15	+18.5	238.8	+58.8	-72.6	.853	×3
	74	*p*	▽ *N*				1	1	1	10	+27.3	214.6	+34.6	-54.0	.627	
		1_{12}	N				1		1	9	+27.4	214.7	+34.7	-53.9	.628	
		3	N					1	-	1	+26.5	214.0	+34.0	-54.8	.615	
	76 +		△ ▽				1	1	1	3	+21.5	176.9	- 3.1	+10.9	.258	
		p•(1)	*N*				*1*		*1*	*2*	*+20.9*	*177.7*	*- 2.3*	*+8.7*	*.245*	
		f•(2)	*S*					*1*	-	*1*	*+22.8*	*175.3*	*- 4.7*	*+15.4*	*.285*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	78↑	Δ-Δ						3	-	3	+19.7	200.0	+20.1	-54.7	.397	*Old C* *
		p•1	*S*					*1*	-	*1*	*+19.8*	*201.8*	*+21.8*	*-56.6*	*.421*	
		f	*N*					*2*	-	*2*	*+19.7*	*199.2*	*+19.2*	*-53.8*	*.386*	
		2_2	N					1	-	1	+19.9	199.7	+19.8	-53.9	.395	
		2_1	N					1	-	1	+19.4	198.6	+18.6	-53.6	.376	
	79→	$p•1_0$	Δ *S*					1	-	1	-25.8	99.2	-80.7	+116.8	.996	*
Aug 20		*5*	*54*	*5*		*4*	*3*	*12*	*35*	*185*	*{(6.9}*	*{180.0}*		*{+17.8}*	*35*	*188*
232.659	72		Ж-Ж	3	2		1	1	73	385	+19.6	242.8	+77.0	-71.4	.968	
G /1549/		*p*	*N*	*1*	*1*		*1*		*50*	*231*	*+19.6*	*245.1*	*+79.3*	*-71.4*	*.978*	
		f	*S*	*2*	*1*			*1*	*23*	*154*	*+19.7*	*239.2*	*+73.4*	*-71.5*	*.953*	
		5	N	1c	1q				49	224	+19.6	245.2	+79.4	-71.4	.978	
			N)				1		1	7	+19.3	243.0	+77.2	-71.8	.970	
		6_0	S					1	-	2	+20.5	241.3	+75.5	-70.6	.963	
		6	S	2d	1u				23+	152	+19.7	239.2	+73.4	-71.5	.953	+20+3
	74	$p•1_{12}$	▽ *N*				1		1	6	+27.4	214.1	+48.3	-59.8	.769	
	78		◇-▽	2		2	2	3	8	24	+19.6	200.1	+34.3	-65.7	.584	
		p•1	*S*				*1*		*1*	*4*	*+19.9*	*203.2*	*+37.4*	*-66.5*	*.625*	
		f	*N*	*2*		*2*	*1*	*3*	*7*	*20*	*+19.6*	*199.5*	*+33.7*	*-65.6*	*.576*	
		2_3	N	1		1			3	5	+19.9	201.2	+35.4	-65.8	.599	
		2_4	N					2	-	5	+19.9	200.3	+34.5	-65.4	.588	
		2_2	N				1	1×	1	4	+19.5	199.3	+33.5	-65.6	.573×	+7
		2_1	N	1		1			3	6	+19.1	197.5	+31.7	-65.5	.548	
	79	*p•1*	Δ *S*					1	-	2	-25.2	100.0	-65.8	+119.5	.950	
	80↑		Δ ▽				1	3	1	7	-21.8	207.8	+42.0	-126.0	.771	
		p	*S*				*1*	*1*	*1*	*4*	*-22.0*	*208.6*	*+42.8*	*-125.8*	*.779*	
		f•2	*N'*					*2*	-	*3*	*-21.5*	*206.8*	*+41.0*	*-126.3*	*.760*	
		1	S'				1		1	3	-22.3	208.6	+42.8	-126.1	.781	
			S)					1	-	1	-21.0	208.6	+42.8	-124.7	.773	
Aug 21		*5*	*55*	*5*	*2*	*2*	*5*	*8*	*83*	*424*	*{+6.9}*	*{165.8}*		*{+18.2}*	*50*	*247*
233.312	72→		◇ Ж	2	1	1	1		42	262	+19.9	243.4	+86.2	-70.6	.994	
G /0730/		*p•5*	*N*	*1b*	*1u*				*(31)*	*(191)*	*+19.8*	*245.0*	*+87.9*	*-70.5*	*.997*	
		f	*S*	*1*		*1*	*1*		*11*	*71*	*+20.1*	*238.9*	*+81.7*	*-70.7*	*.986*	
		6_0	S				(1)		(1)	(21)	+20.9	239.5	+82.3	-69.9	.987	
		6	S	1		1			(10)	(50)	+19.8	238.7	+81.5	-71.1	.985	
	74↓	$p•1_{12}$	Δ *N'*					1	-	1	+27.5	213.6	+56.4	-61.7	.842	
	78		◇-◇	2		2	1	2	6	15	+19.5	200.2	+43.0	-68.9	.691	
		p•1	*S*	*1*		*1*			*2*	*4*	*+19.9*	*203.7*	*+46.5*	*-69.1*	*.732*	
		f	*N*	*1*		*1*	*1*	*2*	*4*	*11*	*+19.3*	*199.0*	*+41.8*	*-68.8*	*.677*	
		2_3	N				1	1	1	5	+19.6	200.8	+43.6	-68.8	.699	
		2_4	N					1	-	1	+19.9	200.1	+43.0	-68.4	.692	
		2_1	N	1		1			3	5	+18.9	196.9	+39.7	-68.9	.651	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF s	SPOTS y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	79	*p* ◇	*N*	1		1	2		4	12	-25.4	100.0	-57.2	+122.7	.903	
		1_o	N	1		1	1×		3	9	-25.2	100.5	-56.7	+122.6	.899	×4←7
		1_1	N				1		1	3	-26.1	98.6	-58.6	+122.8	.913	
	80	◇ ▽		1		1	3	4	6	49	-21.4	207.7	+50.6	-121.1	.841	
		p•1	*S*				*1*	*4*×	*1*	*21*	*-21.2*	*209.3*	*+52.2*	*-120.1*	*.853*	→?↑? ×8
		f	*N*	*1*		*1*	*2*		*5*	*28*	*-21.5*	*206.6*	*+49.4*	*-121.8*	*.832*	
		2_1	N	1		1	1×		4	16	-21.8	206.6	+49.4	-122.1	.835	×7
		2_2	N				1		1	12	-21.2	206.5	+49.3	-121.5	.831	
Aug 22		*5*	*53*	*6*	*1*	*5*	*7*	*7*	*58*	*339*	*{+7.0}*	*{157.2}*		*{+18.4}*		*27* *139*
234.227 G /0526/	78↓	*f*•2_3	Δ *N'*					1	-	1	+19.0	200.7	+55.6	-71.7	.824	
	79	*p* ◇	*S*	1		1	1	1	3	11	-25.3	101.5	-43.6	+128.9	.804	
		1_o	S	1		1	1×		3	9	-25.2	101.8	-43.3	+129.0	.801	×4←5
		1_1	S					1	-	2	-25.9	100.0	-45.1	+128.7	.819	
	80↓	◇ ◇		2		2		5	5	37	-21.7	208.6	+63.6	-116.7	.932	
		p	*S*	*1*		*1*		*3*	*3*	*23*	*-21.7*	*210.1*	*+65.1*	*-116.3*	*.941*	
		f	*N*	*1*		*1*		*2*	*2*	*14*	*-21.7*	*206.2*	*+61.1*	*-117.4*	*.918*	
		1	S	1		1n		1×	3	19	-21.6	210.2	+65.2	-116.1	.941	×4→
			S					1	-	3	-22.6	210.0	+64.9	-117.2	.941	
			S)					1	-	1	-21.8	209.5	+64.4	-116.5	.937	
		2_2	N					1	-	4	-21.1	206.6	+61.5	-116.7	.919	
		2_1	N	1		1		1×	2	10	-21.9	206.0	+60.9	-117.7	.917	×3→6
Aug 23		*3*	*31*	*3*		*3*	*1*	*7*	*8*	*49*	*{+7.0}*	*{145.1}*		*{+18.6}*		*7* *41*
235.309 G /0725/	79	◇–◇		2		2	2	5	9	42	-26.0	97.7	-33.1	+137.1	.723	
		p	*S*	*1*		*1*	*1*	*2*	*4*	*18*	*-25.2*	*99.4*	*-31.3*	*+137.7*	*.702*	
		f	*N*	*1*		*1*	*1*	*3*	*5*	*24*	*-26.7*	*96.4*	*-34.4*	*+136.7*	*.738*	
		1_1	S'					1	-	4	-25.4	100.5	-30.3	+138.9	.694	
		1_2	S	1		1	1×	1	4	14	-25.2	99.1	-31.6	+137.4	.704	×4→9
		2_{11}	N					2	-	5	-26.2	97.3	-33.4	+137.0	.727	
		2_{21}	N	1		1			4	12	-27.0	96.7	-34.1	+137.2	.738	
		2_{22}	N				1		1	5	-26.6	95.9	-34.8	+136.3	.742	
			N					1	-	2	-25.8	93.4	-37.4	+133.6	.757	
	81↑	Δ ▽					2	1	2	12	+20.9	162.3	+31.5	-62.2	.553	
		p•1	*N*				*1*	*1*×	*1*	*8*	*+20.5*	*162.9*	*+32.1*	*-63.2*	*.559*	×2
		f•2_1	*S*				*1*		*1*	*4*	*+21.6*	*161.0*	*+30.2*	*-60.3*	*.541*	
Aug 24		*2*	*22*	*2*		*2*	*4*	*6*	*11*	*54*	*{+7.0}*	*{130.8}*		*{+19.0}*		*16* *78*
236.318 G /0738/	79	◇–Ш		2	1	1	2	7	28	126	-25.3	100.1	-17.4	+153.0	.597	
		p•1_{12}	*S*	*1b*	*1p*			*1*×	*23*	*93*	*-25.0*	*101.2*	*-16.2*	*+154.3*	*.586*	×↓
		f	*N*	*1*		*1*	*2*	*6*	*5*	*33*	*-26.0*	*96.8*	*-20.6*	*+149.5*	*.626*	
		2_{11}	N	1		1		1×	3+	20	-25.7	97.7	-19.7	+150.3	.617	+2+ ×3↓6
		2_{21}	N				1	1	1	4	-27.1	97.1	-20.3	+150.9	.637	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF SPOTS s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_{22}	N				1		1	2	-26.7	95.8	-21.6	+149.0	.641	
		2_3	N					3	-	5	-25.5	95.1	-22.4	+147.0	.634	↑10
			N)					1	-	2	-26.8	92.7	-24.8	+145.6	.665	
	81		Δ-◇	1		1	1	6	5	23	+21.1	162.6	+45.2	-67.2	.719	
		p	*N*	*1*		*1*	*1*	*1*	*5*	*11*	*+20.5*	*163.9*	*+46.5*	*-68.4*	*.733*	
		f	*S*					*5*	-	*12*	*+21.7*	*161.4*	*+44.0*	*-66.1*	*.707*	
		1	N	1		1		1×	4	8	+20.5	164.4	+46.9	-68.5	.738	×2←
			N)				1		1	3	+20.4	162.7	+45.3	-68.3	.719	
			S					2	-	6	+21.8	162.0	+44.6	-66.2	.714	
			S					1	-	2	+20.7	161.6	+44.2	-67.6	.707	
		2_1	S					1	-	2	+22.1	160.9	+43.5	-65.5	.703	
		2_2	S					1	-	2	+22.2	159.8	+42.3	-64.9	.690	
Aug 25		*2*	*25*	*3*	*1*	*2*	*3*	*13*	*33*	*149*	*{+7.1}*	*{117.5}*		*{+19.3}*	*52*	*234*
237.375	79		◇-Ⅱ	4	1	3	5	7	38	188	-25.0	100.4	- 3.0	+174.9	.537	
G /0900/		*p*	*S*	*1*	*1*		*1*	*2*	*24*	*140*	*-24.8*	*101.9*	*- 1.5*	*+177.3*	*.531*	
		f	*N*	*3*		*3*	*4*	*5*	*14*	*48*	*-25.8*	*96.1*	*- 7.4*	*+168.0*	*.557*	
		1_{12}	S	1b	1q		1×		24	138	-24.8	101.9	- 1.5	+177.3	.531	×4←
			S)					2	-	2	-23.5	101.7	- 1.8	+176.7	.509	→10
			(N)					1	-	1	-24.4	98.9	- 4.6	+172.1	.529	
		2_{41}	N	1		1			2	6	-26.5	98.6	- 4.9	+172.1	.560	
		2_{11}	N	1		1	1×		5	19	-25.3	97.2	- 6.3	+169.5	.546	×3
		2_{21}	N				1		1	2	-27.2	96.4	- 7.1	+168.9	.576	
			N					1	-	1	-25.1	95.6	- 7.9	+166.9	.549	
		2_{22}	N					1	-	1	-26.3	95.4	- 8.1	+167.0	.565	×9
		2_3	N	1		1	2×	2	6	18	-26.1	94.0	- 9.5	+164.8	.567	→16xysyx
	81		Δ ◇	1		1	1	2	5	19	+20.7	163.8	+60.3	-70.1	.865	
		p•1	*N*	*1*		*1*	*1×*		*5*	*14*	*+20.2*	*165.1*	*+61.6*	*-70.7*	*.876*	×6
		f	*S*					*2*	-	*5*	*+22.0*	*160.0*	*+56.6*	*-68.3*	*.835*	
		2_1	S					1	-	2	+22.2	160.2	+56.7	-68.0	.837	
		2_2	S					1	-	3	+21.8	159.9	+56.5	-68.5	.834	
Aug 26		*2*	*27*	*5*	*1*	*4*	*6*	*9*	*43*	*207*	*{+7.1}*	*{103.5}*		*{+19.6}*	*69*	*336*
238.464	79		Ⅱ-Ⅱ	7	2	2	2	4	51	203	-25.3	98.2	+ 9.1	-165.2	.561	
G /1108/		*p*	*S*	*1*	*1*			*1*	*23*	*102*	*-24.6*	*102.6*	*+13.5*	*-158.0*	*.566*	
		f	*N*	*6*	*1*	*2*	*2*	*3*	*28*	*101*	*-26.1*	*93.8*	*+ 4.7*	*-172.4*	*.555*	*
		1_{12}	S	1b	1q				23	101	-24.6	102.6	+13.5	-158.0	.566	
			S)					1	-	1	-22.5	101.6	+12.5	-157.9	.533	
		2_{42}	N				1		1	4	-26.5	98.7	+ 9.6	-164.8	.573	
		2_{41}	N				1		1	3	-26.3	97.5	+ 8.4	-166.5	.567	
		2_{11}	N	2		1n			5+	11	-25.3	96.3	+ 7.2	-168.0	.549	+2+2+
		2_{12}	N	1		1a		1×	3	10	-25.3	95.5	+ 6.4	-169.4	.546	×→10↓10
		2_{21}	N					1	-	1	-27.6	94.6	+ 5.5	-171.6	.577	×2↑
		2_3	N	3b	1p			1×	18+	72	-26.3	92.7	+ 3.6	-174.2	.556	+11+5+2
	81→		Δ ▽				1	2	1	6	+21.5	162.6	+73.5	-69.6	.952	
		p•1	*N*				*1*		*1*	*3*	*+20.8*	*164.6*	*+75.5*	*-70.3*	*.962*	
		f	*S*					*2*	-	*3*	*+22.2*	*160.6*	*+71.5*	*-68.9*	*.942*	
		continued														

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_2	S					1	-	1	+21.8	160.7	+71.6	-69.3	.943	
		2_1	S					1	-	2	+22.4	160.6	+71.4	-68.7	.942	
	82 ↑		◇ ◇	3		3	1	2	11	38	+27.0	117.0	+27.9	-49.8	.548	
		p•1	*N*	*1*		*1*	*1×*	*2+*	*3*	*17*	*+27.4*	*118.0*	*+28.9*	*-50.0*	*.563*	×4↓ +→
		f	*S*	*2*		*2*			*8*	*21*	*+26.6*	*116.1*	*+27.0*	*-49.7*	*.536*	
		2_2	S	1		1			3	13	+26.3	116.3	+27.2	-50.3	.535	
		2_1	S	1		1			5	8	+27.2	115.9	+26.8	-48.6	.538	
	83 ↑		▽ △				1	2	1	9	-31.1	41.2	-47.9	+132.5	.865	
		p•(1)	*S)*					*1*	-	*2*	*-30.9*	*43.6*	*-45.5*	*+133.7*	*.848*	
		f	*N*				*1*	*1*	*1*	*7*	*-31.1*	*40.5*	*-48.6*	*+132.2*	*.870*	
			N)					1	-	1	-30.7	41.4	-47.7	+132.2	.861	
		2_1	N				1		1	6	-31.2	40.3	-48.8	+132.2	.871	
Aug 27		*4*	*48*	*10*	*2*	*5*	*5*	*10*	*64*	*256*	*{+7.1}*	*{ 89.1}*		*{+19.9}*	*104*	*412*
239.397	79		◇–Ⅱ	4	1	2	3	8	34	176	-25.3	98.0	+21.2	-148.6	.628	
G /0932/		*p*	*S*	*1*	*1*			*1*	*16*	*87*	*-24.4*	*102.9*	*+26.1*	*-141.9*	*.651*	
		f	*N*	*3*		*2*	*3*	*7*	*18*	*89*	*-26.3*	*93.2*	*+16.4*	*-155.2*	*.605*	
		1_{12}	S	1b	1a				16^+	85	-24.4	102.9	+26.1	-141.9	.652	+13+
		3	S					1	-	2	-23.3	100.8	+24.0	-143.0	.623	
		2_{42}	N					2	-	2	-26.1	98.0	+21.3	-149.0	.634	→5
		2_{13}	N					2	-	3	-25.1	96.6	+19.9	-149.7	.613	→5
			N)					1	-	1	-27.2	96.4	+19.7	-151.8	.635	
		2_{11}	N				3		3	7	-25.4	95.8	+19.0	-151.1	.610	
		2_{12}	N	1		1a			3^+	15	-25.5	95.1	+18.3	-152.0	.606	+2+
		2_{21}	N					1	-	2	-27.8	95.0	+18.2	-154.0	.632	
			N					1	-	1	-25.5	93.7	+16.9	-153.9	.597	
		2_3	N	2		1			12^+	58	-26.6	91.9	+15.1	-157.1	.601	+5+4+
	82		◇ ▽	2		2	1	1	6	15	+26.5	116.8	+40.0	-56.9	.680	
		p•1	*N*				*1*	*1*	*1*	*3*	*+26.8*	*118.8*	*+42.0*	*-58.6*	*.703*	↓6
		f	*S*	*2*		*2*			*5*	*12*	*+26.4*	*116.3*	*+39.5*	*-56.4*	*.674*	
		2_2	S	1		1			2	4	+26.3	116.5	+39.8	-53.3	.676	
		2_1	S	1		1			3	8	+26.4	116.2	+39.4	-58.0	.673	
	83	*f*	△ *N*					3	-	4	-31.2	38.9	-37.9	+138.7	.798	
		2_1	N					1	-	2	-31.5	39.1	-37.7	+139.1	.798	
		2_2	N					2	-	2	-30.9	38.7	-38.1	+138.3	.798	
Aug 28		*3*	*36*	*6*	*1*	*4*	*4*	*12*	*40*	*195*	*{+7.1}*	*{ 76.8}*		*{+20.1}*	*62*	*302*
240.463	79		◇–◇	6		5	2	7	34	96	-25.0	98.1	+35.4	-134.5	.736	
G /1106/		*p*	*S*	*3*		*2*		*3*	*17*	*50*	*-24.2*	*101.7*	*+39.0*	*-130.7*	*.759*	
		f	*N*	*3*		*3*	*2*	*4*	*17*	*46*	*-25.8*	*94.1*	*+31.4*	*-138.5*	*.710*	
		1_{12}	S	1		1			9	18	-24.7	103.3	+40.6	-130.2	.776	
		3	S	2		1u		$3^×$	8^+	32	-23.9	100.8	+38.1	-131.0	.750	+6+2
			N				1		1	4	-25.2	98.4	+35.7	-134.2	.739	×6←9
		4	N	1		1			7	9	-25.1	97.3	+34.6	-135.0	.729	
			(N)					1	-	1	-24.7	98.7	+36.0	-133.4	.738	+3 ×3
		2_1	N	1		1	1^+	$1^×$	3	8	-25.8	95.6	+32.9	-137.1	.720	→12syx
		2_3	N	1b		1		$2^×$	6	24	-26.3	91.5	+28.8	-141.3	.693	×↓

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	82	◇–◇		4		3		4	11	41	+27.0	117.7	+55.0	-62.1	.828	
		p	*N*	*2*		*1*		*2*	*6*	*21*	*+26.9*	*119.4*	*+56.7*	*-62.6*	*.843*	
		f	*S*	*2*		*2*		*2*	*5*	*20*	*+27.0*	*115.8*	*+53.1*	*-61.7*	*.812*	
		1	N					1	-	4	+27.1	120.0	+57.3	-62.4	.848	
		3	N	2b		1		1×	6+	17	+26.9	119.3	+56.6	-62.6	.842	×←+4+2
		2_{12}	S'	1		1			3	11	+26.5	116.4	+53.7	-62.4	.816	
			S					2	-	4	+27.8	116.0	+53.3	-60.7	.816	→7
		4	S	1		1			2	5	+27.4	114.5	+51.8	-60.9	.801	
	83	◇ ◇		3		3	1	3	9	22	-30.8	40.2	-22.5	+151.6	.692	
		p	*S*	*1*		*1*	*1*	*1*	*5*	*13*	*-30.5*	*41.5*	*-21.2*	*+152.7*	*.682*	
		f	*N*	*2*		*2*		*2*	*4*	*9*	*-31.1*	*38.3*	*-24.4*	*+149.9*	*.707*	
		1_1	S	1		1			4	10	-30.4	41.7	-21.0	+152.9	.679	
		1_2	S				1		1	2	-30.5	41.0	-21.7	+152.2	.687	
			S					1	-	1	-31.4	40.4	-22.3	+152.2	.698	
		2_1	N	1		1			2	3	-31.4	38.7	-24.1	+150.4	.707	
		2_2	N	1		1		2×	2	6	-31.0	38.1	-24.6	+149.6	.707	×←6
Aug 29		*3*		*34*		*13*		*11*	*3*	*14*	*54*	*159*	*{+7.2}*	*{ 62.7}*	*{+20.4}*	*71* *207*
241.273	79	◇–◇		10		6	1	2	37	97	-25.1	97.5	+45.5	-127.9	.820	
G /0633/		*p*	*S*	*5*		*3*	*1*		*18*	*37*	*-24.0*	*102.0*	*+50.0*	*-124.2*	*.849*	
		f	*N*	*5*		*3*		*2*	*19*	*60*	*-25.8*	*94.8*	*+42.8*	*-130.2*	*.802*	
		1_{12}	S	1b		1			5	7	-24.7	103.3	+51.3	-124.4	.861	×₃←
		3	S	4t		2	1×		13+	30	-23.8	101.7	+49.7	-124.2	.846	+4+3+3+2
		4	N	2		1		1×	11+	30	-25.3	96.6	+44.6	-128.5	.813	×→+5+4+
		2_1	N	1		1			3+	12	-25.9	95.4	+43.4	-129.9	.807	+2+
		2_3	N	2		1a			5	17	-26.5	91.4	+39.4	-133.0	.779	
			N)					1	-	1	-27.2	90.7	+38.7	-134.2	.777	
	82	◇–◇		2		2		2	10	30	+27.5	117.3	+65.3	-62.8	.906	
		p	*N*	*1*		*1*		*1*	*6*	*14*	*+27.2*	*120.1*	*+68.1*	*-63.4*	*.924*	
		f•4	*S*	*1*		*1*		*1*×	*4*	*16*	*+27.8*	*114.9*	*+62.9*	*-62.3*	*.891*	×↓
		3	N	1		1			6	13	+27.2	120.2	+68.2	-63.4	.925	
			N)					1	-	1	+27.3	118.3	+66.3	-63.2	.913	
	83	◇ ◇		2		2		5	8	19	-31.1	39.3	-12.7	+163.1	.651	
		p	*S*	*1*		*1*		*3*	*5*	*9*	*-30.8*	*41.4*	*-10.6*	*+165.5*	*.642*	
		f	*N*	*1*		*1*		*2*	*3*	*10*	*-31.5*	*37.5*	*-14.5*	*+161.0*	*.659*	
		1_1	S	1		1		1×	5	7	-30.7	41.7	-10.3	+165.9	.633	×←
		1_2	S					1	-	1	-30.4	40.5	-11.5	+164.2	.634	
			S)					1	-	1	-31.6	39.9	-12.1	+164.0	.651	
			N					1	-	1	-30.8	38.3	-13.7	+161.5	.647	
		2_1	N					1	-	3	-31.8	38.0	-14.0	+161.8	.660	
		2_2	N	1		1			3	6	-31.4	37.1	-14.9	+160.5	.660	
Aug 30		*3*		*33*		*14*		*10*	*1*	*9*	*55*	*146*	*{+7.2}*	*{ 52.0}*	*{+20.6}*	*62* *165*
242.309	79	◇–△		3		2		6	13	49	-25.5	95.4	+57.1	-122.9	.904	
G /0725/		*p*•3	*S*					*2*	-	*4*	*-23.6*	*101.7*	*+63.4*	*-118.7*	*.936*	→8↑5
		f	*N*	*3*		*2*		*4*	*13*	*45*	*-25.7*	*94.8*	*+56.5*	*-123.3*	*.901*	
		4	N	1b		1n			9+	33	-25.3	96.0	+57.7	-122.4	.907	+8+
		2_1	N					1	-	1	-26.1	95.1	+56.8	-123.6	.903	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_3	N	2		1		$2^{\times}$	4	10	-26.8	91.4	+53.1	-125.8	.882	$^{\times}\downarrow$
			N)					1	-	1	-27.2	90.0	+51.7	-126.8	.874	
	82→		▽ △				1	2	1	17	+27.4	116.8	+78.5	-63.5	.973	
		p•3	*N*					*1*	*(-)*	*(6)*	*+27.3*	*120.4*	*+82.1*	*-63.4*	*.985*	
		f	*S*				*1*	*1*	*1*	*11*	*+27.4*	*114.8*	*+76.5*	*-63.5*	*.966*	
			S					1	-	(1)	+27.4	117.3	+79.0	-63.4	.975	
		4	S				1		(1)	(10)	+27.4	114.6	+76.3	-63.5	.965	
	83	$p\blacklozenge 1_{12}$	△	*S*				4	-	5	-29.9	40.6	+ 2.3	-176.7	.606	→16↑11
	84	*p•1*	⌑	*N*	1	1			(21)	(84)	+24.2	317.1	-81.2	+66.6	.983	*
Aug 31		*4*	*42*		*4*	*1*	*2*	*1* *12*	*35*	*155*	*{+7.2}*	*{ 38.3}*		*{+20.9}*	*12*	*88*
243.289	79→	$f•2_3$	(△)	*N'*				(1)	(-)	(2)	-26.8	91.4	+66.0	-121.2	.954	
G /0655/	83↓	$f•2_2$	▽	*N'*				1	1	2	-32.0	35.4	+10.0	-166.8	.650	
	84		△ ⌑		1	1		5	19	119	+24.7	316.6	-68.8	+66.3	.927	
		p	*N*		*1*	*1*		*1*	*19*	*104*	*+24.3*	*317.4*	*-68.0*	*+66.7*	*.922*	
		f	*S*					*4*	-	*15*	*+27.8*	*311.1*	*-74.3*	*+63.1*	*.956*	
		1	N		1c	1r			19	99	+24.2	317.5	-67.9	+66.8	.922	
		3	N'					1	-	5	+25.7	315.9	-69.4	+65.1	.931	
			S)					3	-	12	+27.7	311.3	-74.0	+63.2	.955	↑6
		4	S)					1	-	3	+28.1	310.1	-75.3	+62.8	.961	
	85↑		▽ △				2	4	2	9	+28.0	66.4	+41.1	-56.6	.697	
		p•1	*N'*					*2*	-	*3*	*+27.2*	*67.5*	*+42.2*	*-58.1*	*.705*	
		f•2	*S'*				*2*	*2*$^{\times}$	*2*	*6*	*+28.4*	*65.9*	*+40.5*	*-55.8*	*.693*	$^{\times}$↑7
	86↑	*p•1*	△	*N*				1	-	1	+15.9	343.3	-42.0	+74.3	.671	
Sept 1		*5*	*52*		*1*	*1*		*3* *11*	*22*	*133*	*{+7.2}*	*{ 25.4}*		*{+21.2}*	*19*	*108*
244.492	84		◇-⌑		3	1	2	4	24	117	+24.4	316.8	-52.7	+64.9	.801	
G /1149/		*p*	*N*		*2*	*1*	*1*	*2*	*21*	*104*	*+24.2*	*317.5*	*-52.0*	*+64.9*	*.795*	
		f	*S*		*1*		*1*	*2*	*3*	*13*	*+25.6*	*311.6*	*-57.8*	*+64.2*	*.850*	
		1	N		1	1p			16+	89	+24.2	317.8	-51.7	+64.9	.792	+15+
		3	N'					1	-	3	+25.8	316.1	-53.4	+63.2	.811	
		5_1	N		1		1		5	9	+23.9	315.5	-54.0	+65.7	.814	
		5_2	N					1	-	3	+24.1	314.8	-54.6	+65.5	.820	
		6_1	S		1		1	$1^{\times}$	3	10	+25.0	312.2	-57.2	+64.8	.844	$^{\times}{}_2$↓5
		4	S)					1	-	3	+27.8	309.7	-59.7	+62.0	.868	
	85		△ ◇		1		1	1	2	7	+27.9	67.5	+58.1	-61.5	.854	
		p•1	*N*		*1*		*1*		*2*	*5*	*+27.6*	*68.0*	*+58.6*	*-62.0*	*.858*	
		f•2	*S*					*1*	-	*2*	*+28.8*	*66.2*	*+56.7*	*-60.3*	*.845*	
	86		▽ ◇		1		1	1 2	3	11	+15.6	342.8	-26.7	+69.9	.462	
		p•1	*N*		*1*		*1*		*2*	*5*	*+15.5*	*344.4*	*-25.1*	*+69.2*	*.439*	
		f•2	*S*					*1* *2*	*1*	*6*	*+15.6*	*341.4*	*-28.0*	*+70.5*	*.482*	↑5yxx
Sept 2		*3*	*33*		*5*	*1*	*4*	*1* *7*	*29*	*135*	*{+7.2}*	*{ 9.5}*		*{+21.5}*	*36*	*167*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
ROT No 1659																
245.434	84		◇-◇	6	5	2	2		32	124	+24.6	316.8	-34.2	+61.0	.672	
G /1026/	*p*		*N*	*3*	*3*	*2*			*24*	*104*	*+24.3*	*317.8*	*-32.1*	*+61.0*	*.661*	
	f		*S*	*3*	*2*		*2*		*8*	*20*	*+25.8*	*311.8*	*-45.2*	*+61.1*	*.732*	
	1	N		1b	1p				13+	85	+24.3	318.3	-38.7	+60.8	.655	+12+
	3	N		1	1				4	4	+25.6	316.6	-40.5	+59.7	.680	
	5_1	N		1	1				5	9	+23.7	315.9	-41.2	+62.6	.681	
	5_2	N				1			1	3	+24.1	315.1	-42.0	+62.3	.692	
	5_3	N				1			1	3	+25.4	314.4	-42.6	+60.7	.703	↑6
	6_1	S		3	2				8+	18	+25.7	311.8	-45.2	+61.2	.732	+4+2+2
	6_2	S						2	-	2	+26.6	311.6	-45.4	+60.2	.736	
	85↓ *p*•1	△	*N'*					1	-	1	+27.8	68.2	+71.2	-63.0	.941	
	86	◇	◇	4	2	3			15	46	+15.6	343.0	-14.0	+56.9	.279	
	p•1		*N*	*3+*	*1n*				*7*	*22*	*+15.7*	*344.8*	*-12.2*	*+53.4*	*.254*	+→6↑7
	f		*S*	*1*	*1*	*3*			*8*	*24*	*+15.6*	*341.4*	*-15.7*	*+60.2*	*.301*	
	2	S		1b	1	2×			7	20	+15.4	341.4	-15.6	+60.6	.299	×s↑5
		S				1			1	4	+16.4	341.1	-16.0	+58.1	.312	
Sept 3		*3*	*35*	*10*	*7*	*5*	*3*		*47*	*171*	*{+7.2}*	*{357.0}*		*{+21.7}*	*75*	*272*
246.306	84		◇-◇	2	2	5	3		20	121	+24.6	316.7	-28.9	+54.4	.540	
G /0721/	*p*		*N*	*1*	*1*	*2*	*2*		*15*	*95*	*+24.3*	*318.0*	*-27.5*	*+53.9*	*.522*	
	f		*S*	*1*	*1*	*3*	*1*		*5*	*26*	*+25.9*	*311.6*	*-33.9*	*+56.0*	*.608*	
	1	N		1b	1p				13	83	+24.2	318.3	-27.2	+53.8	.518	
	3	N				1			1	4	+25.7	317.2	-28.3	+52.2	.542	
	5_1	N				1			1	6	+23.9	316.0	-29.6	+56.2	.545	
	5_2	N						1	-	1	+24.2	315.1	-30.5	+56.4	.557	
	5_3	N						1	-	1	+25.5	314.8	-30.7	+54.4	.569	
	6_1	S		1	1	2			4+	20	+25.6	311.8	-33.7	+56.3	.604	+2+
	6_2	S				1			1	5	+26.7	311.1	-34.4	+55.0	.618	
	4	S						1	-	1	+27.3	310.1	-35.4	+54.8	.633	
	86	◇	◇	4	2			2	16	71	+15.9	343.8	- 1.7	+10.8	.159	
	p•1		*N*	*2b*	*1n*				*7+*	*43*	*+16.3*	*345.5*	*0.0*	*-0.1*	*.158*	*+4+2+*
	f		*S*	*2*	*1*			*2*	*9*	*28*	*+15.4*	*341.1*	*- 4.4*	*+27.5*	*.161*	
	2	S		2	1n				9+	26	+15.3	341.1	- 4.4	+27.5	.160	+4+2+
		S						2	-	2	+16.2	340.7	- 4.8	+27.4	.177	
Sept 4		*2*	*27*	*6*	*4*	*5*	*5*		*36*	*192*	*{+7.2}*	*{345.5}*		*{+21.9}*	*65*	*344*
247.428	84		◇-◇	2	2		9		13	82	+24.2	317.0	-13.6	+35.8	.366	
G /1017/	*p*		*N*	*1*	*1*		*4*		*11*	*71*	*+23.9*	*318.0*	*-12.7*	*+34.8*	*.353*	
	f		*S*	*1*	*1*		*5*		*2*	*11*	*+26.4*	*311.2*	*-19.5*	*+41.8*	*.451*	
	1	N		1c	1q				11	67	+23.8	318.2	-12.4	+34.5	.350	
	5_3	N					1		-	1	+25.2	315.1	-15.6	+38.0	.397	
	5_4	N					2		-	2	+24.5	314.0	-16.7	+40.9	.401	
		(N)					1		-	1	+24.9	312.3	-18.4	+42.8	.423	
	6_1	S		1	1		2×		2	7	+26.0	311.6	-19.1	+41.9	.442	×+7

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		6_2	S					2	-	2	+27.2	310.9	-19.8	+41.0	.462	
		4	S					1	-	2	+27.1	310.0	-20.6	+42.1	.470	
	86		▽ ◇	2		2	2	4	9	26	+16.2	344.1	+13.4	-54.2	.276	
		p	*N*	*2*		*2*		*2*	*7*	*18*	*+16.3*	*345.5*	*+14.8*	*-56.4*	*.295*	
		f	*S*				*2*	*2*	*2*	*8*	*+15.8*	*341.2*	*+10.5*	*-49.3*	*.233*	
		1	N	2		2			7+	16	+16.3	345.6	+14.9	-56.7	.297	+3+2+
			N					2	-	2	+16.5	344.3	+13.6	-53.8	.281	
			S				1		1	3	+14.6	341.5	+10.8	-54.2	.224	
		2	S				1	2×	1	5	+16.5	341.0	+10.3	-46.3	.238	→5+8 ×3
Sept 5		*2*	*24*	*4*		*4*	*2*	*13*	*22*	*108*	*{+7.2}*	*{330.7}*		*{+22.2}*	*41*	*202*
248.501	84		▽-◇	1		1	3	6	13	83	+24.0	317.0	+ 0.5	-1.8	.292	
G /1201/		*p*	*N*	*1*		*1*	*1*	*3*	*11*	*74*	*+23.7*	*317.6*	*+ 1.1*	*-3.6*	*.285*	
		f	*S*				*2*	*3*	*2*	*9*	*+27.0*	*311.5*	*- 5.0*	*+13.1*	*.349*	
		1	N	1b		1r			10	68	+23.6	317.9	+ 1.4	-4.4	.284	
			N					1	-	1	+24.1	315.8	- 0.7	+2.1	.292	
		5_3	N'					1	-	1	+25.0	315.4	- 1.2	+3.5	.307	
		5_4	N				1		1	3	+24.4	314.6	- 1.9	+5.9	.298	
			(N)					1	-	1	+25.0	313.6	- 2.9	+8.6	.310	
			S					2	-	3	+28.3	311.8	- 4.8	+11.5	.368	+6
		6_1	S				1	1×	1	4	+26.1	311.4	- 5.1	+13.9	.335	×+6
		6_2	S				1		1	2	+27.0	311.2	- 5.3	+13.7	.350	
	86		△ ◇	1		1		4	2	9	+16.7	344.9	+28.3	-68.5	.492	
		p+1	*N*	*1*		*1*		*2*	*2*	*7*	*+16.6*	*345.9*	*+29.3*	*-69.2*	*.505*	
		f+2	*S'*					*2*	-	*2*	*+17.0*	*341.6*	*+25.0*	*-66.0*	*.445*	*+6*
	87	→*p*•1	◇ *N*	1		1			(7)	17	+19.9	244.3	-72.3	+71.4	.946	*
Sept 6		*3*	*34*	*3*		*3*	*3*	*10*	*22*	*109*	*{+7.3}*	*{316.5}*		*{+22.4}*	*33*	*185*
249.487	84	*p*	◇ *N*	1		1	1	2	11	76	+23.8	317.4	+13.9	-37.2	.363	
G /1141/		1	N	1b		1r			10	70	+23.7	317.6	+14.1	-37.8	.364	
		5_5	N'					1	-	1	+23.3	314.6	+11.1	-32.3	.331	
		5_4	N				1	1	1	5	+24.7	314.5	+11.0	-29.7	.350	
	86	→*p*+1	△ *N*					2	-	3	+17.0	346.0	+42.5	-72.8	.678	
	87	*p*•1	◇ *N*	1		1			5	10	+19.8	244.4	-59.2	+71.2	.855	
Sept 7		*3*	*3*	*2*		*2*	*1*	*4*	*16*	*89*	*{+7.3}*	*{303.5}*		*{+22.6}*	*26*	*156*
250.372	84		△ ◇	1		1		4	11	83	+23.9	316.7	+24.4	-51.9	.487	
G /0856/		*p*	*N*	*1*		*1*		*2*	*11*	*75*	*+23.6*	*317.1*	*+25.3*	*-53.2*	*.492*	
		f	*S*					2	-	*8*	*+26.8*	*313.0*	*+16.2*	*-40.1*	*.446*	
		1	N	1c		1r			11	68	+23.6	317.4	+25.6	-53.4	.495	
		5_5	N					2	-	7	+23.4	314.5	+22.7	-50.9	.458	
		6_3	S)					1	-	5	+27.3	315.4	+15.6	-40.5	.461	
			S					1	-	3	+25.9	309.1	+17.2	-39.4	.422	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	87		Δ ◇	1		1		1	3	14	+19.9	243.9	-47.9	+69.7	.745	
		p•1	*N*	*1*		*1*			*3*	*12*	*+19.6*	*244.3*	*-47.5*	*+70.0*	*.741*	
		f•2	*(S)*					*1*	-	*2*	*+21.5*	*241.7*	*-50.1*	*+68.1*	*.772*	
Sept 8		*2 23*		*2*		*2*		*5*	*14*	*97*	*{+7.3}*	*{291.8}*		*{+22.8}*	*23*	*164*
251.414	84		Δ-◇	1		1		4	9	61	+23.8	316.7	+38.6	-61.4	.652	
G /0956/		*p*	*N*	*1*		*1*		*1*	*9*	*58*	*+23.7*	*317.0*	*+38.9*	*-61.7*	*.655*	
		f	*S*					*3*	-	*3*	*+26.0*	*312.4*	*+34.4*	*-56.1*	*.614*	
		1	N	1		1			9	57	+23.7	317.0	+38.9	-61.7	.655	
		5_5	N'					1	-	1	+24.1	314.3	+36.3	-60.0	.626	
			S)					2	-	2	+25.6	312.5	+34.5	-56.8	.613	
		(6_3)	S'					1	-	1	+26.9	312.1	+34.1	-54.6	.615	
	87	*p•1*	*Δ N*					1	-	2	+19.7	244.3	-33.7	+65.7	.575	
	88↑		▽ Δ				1	1	1	5	-34.9	329.3	+51.3	-134.7	.901	
		p•1	*S'*					*1*	-	*2*	*-34.4*	*330.4*	*+52.4*	*-133.7*	*.905*	
		f•2	*N)*				*1*		*1*	*3*	*-35.3*	*328.6*	*+50.5*	*-135.4*	*.899*	
	89↦		Δ ▽				2	1	2	10	+16.2	205.7	-72.4	+75.3	.947	
		p•1_{12}	*N*				*2*		*2*	*9*	*+16.1*	*206.2*	*-71.9*	*+75.4*	*.945*	
		f•2_1	*S'*					*1*	-	*1*	*+16.6*	*201.5*	*-76.6*	*+74.7*	*.968*	
	90↦		◇	8	2	4			130	790	+ 7.5	196.9	-81.2	+83.6	.986	* *Old C*
		p	*S*	*4*	*2*	*1*			*107*	*413*	*+ 8.4*	*197.4*	*-80.7*	*+82.7*	*.984*	
		f	*N*	*4*		*3*			*23*	*377*	*+ 6.4*	*196.3*	*-81.7*	*+84.6*	*.988*	
		1_{12}	S	2b	1u				77	(280)	+ 8.0	198.6	-79.5	+83.2	.981	
		2_{1-4}	N	2		1			10	(230)	+ 6.4	197.3	-80.8	+84.7	.985	
		3	S'	1	1				(25)	(83)	+ 9.2	195.2	-82.8	+81.7	.990	
		8	N'	1		1			(7)	(67)	+ 6.7	194.9	-83.2	+84.2	.992	
		10	N'	1		1			(6)	(80)	+ 6.2	194.8	-83.2	+84.7	.992	
		5_{12}	S'	1		1			(5)	(50)	+ 9.3	194.1	-84.0	+81.5	.993	
		U 2_4	*N*	*/1/*					*1*	-	*+ 6.3*	*199.7*	*-78.3*	*+85.1*	*.978*	
		U 1_2	*S*	*1*					*17*	-	*+ 8.4*	*199.4*	*-78.7*	*+82.9*	*.979*	
		U 2_3	*N'*	*/1/*					*1*	-	*+ 6.0*	*198.7*	*-79.4*	*+85.3*	*.982*	
		U 1_1	*S*	*1*					*60*	-	*+ 7.9*	*198.3*	*-79.7*	*+83.3*	*.982*	
		U 2_2	*N'*	*/1/*					*1*	-	*+ 6.4*	*197.6*	*-80.4*	*+84.7*	*.985*	
		U 2_1	*N'*	*/1/*					*1*	-	*+ 6.6*	*196.0*	*-82.1*	*+84.4*	*.989*	
Sept 9		*5 57*		*9*	*2*	*5*	*3*	*7*	*142*	*868*	*{+7.3}*	*{278.1}*		*{+23.0}*	*61*	*367*
252.431	84		Δ ◇	1		1		2	5	54	+23.9	316.4	+51.8	-65.3	.792	
G /1020/		*p*	*N*	*1*		*1*		*1*	*5*	*53*	*+23.8*	*316.5*	*+51.9*	*-65.4*	*.793*	
		f•(6_3)	*S'*					*1*	-	*1*	*+26.9*	*311.7*	*+47.0*	*-60.4*	*.753*	
		1	N	1		1			5	52	+23.8	316.5	+51.9	-65.4	.793	
		5_5	N'					1	-	1	+24.4	314.7	+50.0	-64.3	.777	
	87	*p•3*	*◇ N'*	1		1			2	4	+21.2	242.0	-22.6	+55.0	.439	
	88→	*p•1*	*◇ S*	1		1			2	7	-34.0	332.2	+67.6	-127.8	.971	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF SPOTS s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	89	◇-◇		2		2	1	2	6	23	+16.0	204.1	-60.5	+75.6	.865	
	p		*N*	*1*		*1*	*1*	*1*	*4*	*13*	*+15.7*	*205.9*	*-58.7*	*+75.9*	*.850*	
	f•2_1		*S*	*1*		*1*		*1*×	*2*	*10*	*+16.4*	*201.8*	*-62.8*	*+75.2*	*.885*	×4+6
	1_2	N					1		1	5	+15.6	206.3	-58.4	+76.0	.847	
	1_1	N		1		1			3	6	+15.9	206.2	-58.4	+75.7	.848	
	1_4	N						1	-	2	+15.3	204.0	-60.6	+76.5	.866	
	90	⧗⧗	δ	18	3	6			173	1182	+ 7.9	195.9	-68.7	+84.3	.928	
	p		*S*	*8*	*2*	*2*			*105*	*646*	*+ 8.7*	*196.5*	*-68.1*	*+83.6*	*.924*	
	f		*N*	*10*	*1*	*4*			*68*	*536*	*+ 7.1*	*195.2*	*-69.4*	*+85.2*	*.933*	
	1_{12}	S		2b	1u				63	(236	+ 8.1	199.0	-65.6	+84.4	.908	
	2_{1-4}	N		4d	1u				21	(220	+ 6.5	197.3	-67.3	+86.0	.920	
	7	S		1b		1u			7	(90	+ 8.0	197.3	-67.3	+84.3	.920	×→8
	3	S		3b×	1u				22+	129	+ 9.0	195.5	-69.1	+83.1	.931	+17+3+2
	10	N		2b		1a			13+	104	+ 6.6	195.3	-69.3	+85.7	.933	+8+5
	8	N		1b		1u			13	116	+ 7.5	194.6	-70.0	+84.7	.938	
	5	S		2b		1u			13+	191	+ 9.4	193.8	-70.8	+82.6	.941	+10+3
	4_1	N		1		1			7	14	+ 7.4	193.6	-71.0	+84.7	.943	
	6_1	N		2d		1			14+	82	+ 8.7	190.6	-74.1	+83.1	.959	+9+5
	U 1_2	*S*		*1*					*10*	-	*+ 8.6*	*199.6*	*-65.0*	*+83.9*	*.903*	
	U 2_4	*N*		*1*					*2*	-	*+ 6.4*	*199.6*	*-65.0*	*+86.3*	*.904*	
	U 2_3	*N*		*1*					*2*	-	*+ 6.0*	*199.2*	*-65.4*	*+86.8*	*.908*	
	U 1_1	*S*		*1*					*53*	-	*+ 8.0*	*198.9*	*-65.7*	*+84.5*	*.909*	
	U 2_2	*N*		*1*					*7*	-	*+ 6.4*	*197.3*	*-67.3*	*+86.2*	*.920*	
	U 2_1	*N*		*1b*					*10*	-	*+ 6.7*	*196.5*	*-68.2*	*+85.7*	*.926*	
Sept 10		*5*	*69*	*23*	*3*	*11*	*1*	*4*	*188*	*1270*	*{+7.3}*	*{264.6}*		*{+23.2}*	*147*	*975*
253.456 G /1057/	84	*p*•1	◇	*N*	*1*		*1*		8	46	+23.8	315.9	+64.9	-67.0	.902	
	87↓	*p*•3	△	*N*				1	-	2	+19.5	240.5	-10.6	+39.1	.277	
	89	◇-⧗		4	1	2		7	26	90	+16.2	205.0	-46.0	+74.4	.719	
	p		*N*	*1*	*1*			*6*	*17*	*54*	*+16.0*	*207.1*	*-44.0*	*+74.4*	*.696*	
	f		*S*	*3*		*2*		*1*	*9*	*36*	*+16.6*	*202.0*	*-49.1*	*+74.3*	*.755*	
	1_{12}	N		1b	1u				17	46	+16.0	207.3	-43.8	+74.4	.693	
	1_3	N						4	-	6	+16.4	205.9	-45.2	+74.0	.711	
	1_4	N)						2	-	2	+15.8	205.7	-45.4	+75.0	.712	
	2_2	S		1		1		1×	4	15	+16.5	202.4	-48.6	+74.4	.750	×↑
	2_1	S		2		1			5+	21	+16.6	201.7	-49.4	+74.3	.758	+2+2+
	90	⧗⧗	δ	16	3	6	2	1	156	1102	+ 7.9	196.6	-54.5	+85.5	.810	
	p		*S*	*5*	*2*	*2*	*1*	*1*	*98*	*621*	*+ 8.7*	*197.2*	*-53.9*	*+84.6*	*.804*	
	f		*N*	*11*	*1*	*4*	*1*		*58*	*481*	*+ 7.0*	*195.8*	*-55.3*	*+86.6*	*.819*	
	1_{12}	S		2b	1p				54	272	+ 8.2	199.6	-51.5	+85.3	.779	
	9	S					1		1	3	+ 9.3	198.5	-52.6	+83.8	.790	
		S)						1	-	2	+10.9	197.9	-53.1	+81.7	.796	
	2_{1-4}	N		4d	1u				22	(213	+ 6.5	197.9	-53.2	+87.3	.799	
	7	S		1		1p			7	93	+ 7.9	197.1	-54.0	+85.5	.806	
	3	S		1	1				22	101	+ 8.8	195.9	-55.2	+84.3	.817	
	10	N		2		1u			9	(80	+ 7.0	195.5	-55.6	+86.5	.822	
	8	N		2		1u			13+	(116	+ 6.9	195.2	-55.9	+86.6	.825	+8+5
	4_1	N		1		1			4	9	+ 7.6	193.7	-57.4	+85.6	.839	
	5	S		1		1			14	150	+ 9.8	193.6	-57.5	+83.0	.839	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF SPOTS s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		6_2	N				1		1	6	+ 9.2	190.6	-60.4	+83.5	.866	
		6_1	N	2		1			9+	57	+ 8.5	190.3	-60.8	+84.4	.869	+7+2
		U 1_2	*S*	*1*					*10*	-	*+ 8.7*	*200.2*	*-50.9*	*+84.6*	*.772*	
		U 2_4	*N*	*1*					*2*	-	*+ 6.6*	*200.0*	*-51.1*	*+87.4*	*.776*	
		U 2_3	*N*	*1*					*3*	-	*+ 6.1*	*199.5*	*-51.6*	*+88.0*	*.782*	
		U 1_1	*S*	*1*					*44*	-	*+ 8.1*	*199.4*	*-51.7*	*+85.4*	*.781*	
		U 2_2	*N*	*1*					*11*	-	*+ 6.6*	*197.9*	*-53.2*	*+87.2*	*.798*	
		U 2_1	*N*	*1b*					*9*	-	*+ 6.7*	*196.7*	*-54.3*	*+87.0*	*.810*	
Sept 11		*4*	*69*	*21*	*4*	*9*	*2*	*9*	*190*	*1240*	*{+7.2}*	*{251.1}*		*{+23.4}*	*227*	*1456*
254.334 G /0801/	84	→*p*•1	◊	*N* 1		1			6	34	+24.0	315.4	+75.9	-67.1	.963	
	89		⧺◊	3	1	1	4	6	33	177	+16.6	204.9	-34.6	+71.3	.576	
		p		*N 1*		*1*	*3*	*1*	*14*	*73*	*+16.2*	*208.7*	*-30.8*	*+70.6*	*.523*	
		f		*S 2*	*1*		*1*	*5*	*19*	*104*	*+16.9*	*202.1*	*-37.4*	*+71.8*	*.614*	
		1_{12}	N	1		1			11	60	+16.2	208.9	-30.6	+70.5	.521	
			N)					1	-	1	+14.7	208.6	-30.9	+73.5	.519	
		1_3	N				2		2	10	+16.3	208.1	-31.4	+70.8	.531	
		1_4	N'				1		1	2	+16.0	206.1	-33.4	+72.0	.559	
		2_4	S					1	-	2	+15.3	204.9	-34.6	+73.6	.573	
		2_3	S'				1	2	1	6	+15.8	203.7	-35.8	+73.1	.590	
		2_5	S'					2	-	2	+14.7	203.5	-36.0	+74.9	.591	
		2_{12}	S	2b	1p				18+	94	+17.0	201.9	-37.6	+71.6	.617	+14+4
	90		◊⧺✖	δ 18	1	10	4	7	127	1005	+ 7.7	197.2	-42.3	+86.5	.669	
		p		*S 6*	*1*	*3*	*2*	*3*	*80*	*503*	*+ 8.7*	*197.8*	*-41.7*	*+85.0*	*.662*	
		f		*N 12*		*7*	*2*	*4*	*47*	*502*	*+ 6.7*	*196.7*	*-42.8*	*+88.0*	*.677*	
			(N)					1	-	1	+ 4.1	202.3	-37.2	+92.8	.607	
		2_{34}	N	3b		1p			6	52	+ 6.1	200.2	-39.3	+89.2	.632	
		1_{12}	S	2b	1p				48	292	+ 8.4	199.8	-39.7	+85.5	.636	
		9	S					1	-	1	+ 9.9	198.8	-40.7	+83.2	.648	
		2_2	N	2b		1a			9+	135	+ 6.5	198.3	-41.1	+88.4	.656	+4+3+
			S)					1	-	1	+ 9.0	197.7	-41.8	+84.6	.663	
		7	S	2		1			6+	20	+ 8.2	197.1	-42.4	+85.7	.671	+3+2+
			N					1	-	1	+ 5.0	196.9	-42.6	+90.5	.676	
		2_1	N	2		1a			10+	(75	+ 6.5	196.7	-42.8	+88.3	.677	+8+2
		3	S	1		1a			13	(82	+ 8.7	196.0	-43.5	+84.9	.685	
		10	N	2		1a			7+	(96	+ 6.4	195.7	-43.8	+88.3	.691	+3+2+
		8	N	1		1a			7	(122	+ 7.2	195.1	-44.4	+87.2	.697	
		5_2	S				2×	1	2	13	+ 9.3	194.6	-44.9	+84.1	.703	†7yyx
		4_1	N				1		1	3	+ 7.6	194.0	-45.5	+86.4	.711	×6+3
		5_1	S	1		1a			11	94	+ 9.8	193.5	-46.0	+83.4	.716	
			N)					1	-	1	+ 7.0	192.9	-46.6	+87.2	.724	
		6_3	N'					1	-	1	+ 8.1	192.1	-47.4	+85.6	.733	
		6_2	N				1		1	4	+ 9.2	190.3	-49.2	+84.1	.753	
		6_1	N	2		2			6+	11	+ 8.3	190.2	-49.3	+85.3	.754	+4+2 †6
		U 1_2	*S*	*1*					*8*	-	*+ 8.9*	*200.4*	*-39.1*	*+84.7*	*.629*	
		U 1_1	*S*	*1*					*40*	-	*+ 8.3*	*199.7*	*-39.8*	*+85.7*	*.637*	
Sept 12		*3*	*66*	*22*	*2*	*12*	*8*	*13*	*166*	*1216*	*{+7.2}*	*{239.5}*		*{+23.6}*	*245*	*1798*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
255.334	89		◇-Ⅱ	5	1	3		7	36	184	+16.5	206.0	-20.3	+62.4	.375	
G /0801/		*p*	*N*	*2*	*1*	*1*		*3*	*18*	*96*	*+16.3*	*209.6*	*-16.7*	*+59.2*	*.322*	
		f	*S*	*3*		*2*		*4*	*18*	*88*	*+16.7*	*202.1*	*-24.2*	*+66.0*	*.433*	
		1_{1-3}	N	1c	1q				16	88	+16.4	210.0	-16.3	+58.5	.317	
		1_4	N					2	-	3	+16.0	206.5	-19.8	+64.0	.364	
		1_5	N'	1		1		1×	2	5	+15.0	204.4	-21.9	+68.2	.390	×↑9
		2_4	S					2	-	2	+16.3	203.7	-22.6	+65.7	.407	
		2_3	S	2×		1			6+	15	+16.5	202.7	-23.6	+66.0	.422	×→8+3+2+
		2_5	S)					2	-	2	+15.6	202.3	-24.0	+68.3	.424	
		2_{12}	S	1		1			12	69	+16.8	201.9	-24.4	+65.9	.436	
	90		◇≠Ⅱ	δ 9	1	6	10	25	104	826	+ 7.7	197.5	-28.8	+87.1	.479	
		p	*S*	*4*	*1*	*2*	*6*	*11*	*70*	*422*	*+ 8.8*	*198.0*	*-28.3*	*+85.0*	*.472*	
		f	*N*	*5*		*4*	*4*	*14*	*34*	*404*	*+ 6.6*	*197.0*	*-29.3*	*+89.4*	*.487*	
			(N)					1	-	1	+ 6.4	201.9	-24.4	+90.5	.413	
		2_{34}	N	1		1			5	30	+ 6.1	200.7	-25.6	+91.0	.432	
		1_{12}	S	2b	1q				43	253	+ 8.5	200.0	-26.3	+85.5	.441	xyx
		9	S				1	2	1	4	+11.0	199.6	-26.7	+79.8	.450	→10↑8
		2_2	N	2+		1			8	117	+ 6.5	198.8	-27.5	+89.7	.461	+→8↑5
			S					2	-	3	+ 9.5	197.3	-29.0	+83.5	.483	→6
		7	S				2	2	2	8	+ 8.4	196.9	-29.4	+85.8	.489	→10yxyx
		2_1	N	1		1			9	(115	+ 6.3	196.8	-29.5	+89.9	.491	
		3	S	1		1			14	(73	+ 8.7	196.1	-30.2	+85.2	.502	
		10	N				1		2	(52	+ 6.5	196.0	-30.3	+89.5	.503	
		8	N	1		1a			7	(64	+ 7.1	195.4	-30.9	+88.2	.511	
		4_3	N'					1	-	1	+ 7.0	194.2	-32.1	+88.4	.530	
		5_2	S				3	4×	3	25	+ 9.2	194.1	-32.2	+84.2	.531	→17↑7×10
		4_2	N'					2	-	5	+ 6.9	193.3	-33.0	+88.5	.543	
		5_1	S	1		1a		1×	7	56	+ 9.8	193.2	-33.1	+83.0	.544	×3→
		4_1	N'					1	-	1	+ 7.7	192.8	-33.6	+87.0	.551	
			N)					1	-	2	+10.4	191.8	-34.5	+82.1	.565	
		6_3	N				1	3	1	5	+ 8.3	191.7	-34.6	+85.9	.566	
		6_2	N				1		1	2	+ 9.5	190.8	-35.5	+83.8	.578	
		6_1	N'				1	5	1	9	+ 8.4	190.6	-35.7	+85.6	.581	→10↑6
		U 1_2	*S*	*1*					*6*	-	*+ 9.0*	*200.5*	*-25.8*	*+84.2*	*.434*	
		U 1_1	*S*	*1*					*37*	-	*+ 8.4*	*200.0*	*-26.4*	*+85.7*	*.442*	
Sept 13		*2*	*56*	*14*	*2*	*9*	*10*	*32*	*140*	*1010*	*{+7.2}*	*{226.3}*		*{+23.8}*	*249*	*1789*
256.424	89		Ⅱ-◇	4	1	1	1	5	29	191	+16.5	205.3	- 6.6	+30.6	.207	
G /1011/		*p*	*N*	*1*		*1*		*2*	*8*	*73*	*+16.5*	*210.7*	*- 1.2*	*+7.4*	*.164*	
		f	*S*	*3*	*1*		*1*	*3*	*21*	*118*	*+16.6*	*202.0*	*- 9.9*	*+44.9*	*.233*	
		1_{1-3}	N	1		1			8	71	+16.5	210.8	- 1.1	+6.6	.163	
		1_5	N'					2	-	2	+15.6	205.4	- 6.5	+36.5	.185	
		2_4	S				1	2×	1	4	+15.9	202.8	- 9.1	+45.0	.217	×→6
		2_5	S)					1	-	1	+15.6	202.3	- 9.6	+47.0	.219	
		2_{1-3}	S	3b	1p				20+	113	+16.6	202.0	- 9.9	+44.9	.234	+13+4+3
	90		◇≠Ⅱ	δ 15	1	11	7	12	122	783	+ 7.8	197.9	-14.0	+86.6	.241	
		p	*S*	*10*	*1*	*6*	*2*	*5*	*78*	*481*	*+ 8.5*	*198.7*	*-13.2*	*+83.8*	*.229*	
		f	*N*	*5*		*5*	*5*	*7*	*44*	*302*	*+ 6.8*	*196.8*	*-15.1*	*+91.0*	*.260*	
			(S)					1	-	2	+ 6.3	202.8	- 9.1	+95.3	.158	
		12	N'					3	-	6	+ 7.2	202.3	- 9.7	+89.4	.167	
		2_{34}	N'				2		2	10	+ 6.2	201.3	-10.6	+94.8	.185	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_{12}	S	2b	1r				43	246	+ 8.4	200.5	-11.4	+83.2	.197	
			S)				1	1×	1	3	+11.2	201.2	-10.7	+68.6	.196	* ×←
		11_1	S	1		1a			3	58	+ 6.6	200.1	-11.8	+92.0	.205	
		9	S	1		1			2	4	+10.3	199.7	-12.2	+74.9	.216	
		2_2	N	1		1a			5	51	+ 6.2	198.9	-13.0	+93.6	.225	
			S)					1	-	1	+11.8	198.4	-13.5	+69.9	.245	*
		7	S	1		1	1×		3	16	+ 9.0	197.4	-14.5	+81.9	.251	×↑
		2_1	N	1		1a			13	79	+ 6.2	197.3	-14.6	+93.1	.252	
		3	S	1		1a			14	65	+ 8.6	196.6	-15.3	+83.5	.264	
		10	N	1b		1			10	(48	+ 6.6	196.4	-15.5	+91.3	.267	
		8	N	1		1a		1×	8+	(80	+ 7.1	195.7	-16.2	+89.4	.278	+7+ ×←7
			S)					1	-	3	+10.0	194.9	-17.0	+79.2	.294	
		5_2	S	3t+		1		1×	8	41	+ 9.1	194.7	-17.2	+82.4	.296	+→12 ×↓
		4_3	N'				1		1	9	+ 8.3	194.2	-17.7	+85.3	.303	
		5_1	S'	1		1a			4	42	+ 9.9	193.2	-18.7	+80.4	.322	
		4_2	N	1		1			3	7	+ 8.9	193.2	-18.8	+83.6	.321	
		4_1	N				1		1	5	+ 9.4	192.4	-19.5	+82.2	.334	
		6_3	N'					1	-	1	+ 8.3	191.4	-20.5	+85.6	.349	
			N)					2	-	3	+10.9	191.1	-20.8	+78.1	.358	→5↑8
		6_2	N'				1		1	3	+ 9.5	190.7	-21.2	+82.3	.361	
Sept 14		*2*	*58*	*19*	*2*	*12*	*8*	*17*	*151*	*974*	*{+7.2}*	*{211.9}*		*{+24.0}*	*293*	*1892*
257.646	89		◊–◊	4	1	2		5	39	157	+16.6	205.7	+10.0	-42.3	.239	
G /1531/		*p*	*N*	*1*	*1*			*2*	*16*	*63*	*+16.9*	*211.0*	*+15.3*	*-55.4*	*.306*	
		f	*S*	*3*		*2*		*3*	*23*	*94*	*+16.5*	*202.2*	*+ 6.5*	*-33.6*	*.195*	
		1_{1-3}	N	1c	1p				16	61	+16.9	211.1	+15.4	-55.6	.308	
		1_5	N					2	-	2	+16.5	206.8	+11.1	-48.4	.248	
		2_6	S'					1	-	1	+16.0	204.0	+ 8.2	-41.8	.208	
		2_{3-5}	S	2		1			9	35	+16.3	202.6	+ 6.9	-35.8	.197	
		2_{12}	S	1		1			14	56	+16.6	201.9	+ 6.2	-32.1	.194	
		2_7	S)					2	-	2	+15.2	200.8	+ 5.0	-31.2	.164	→6
	90		⌑⌖✖	δ 18	2	11	4	15	148	795	+ 8.3	197.7	+ 1.9	-46.9	.062	
		p	*S*	*9*	*1*	*5*	*2*	*5*	*85*	*464*	*+ 8.6*	*199.2*	*+ 3.5*	*-57.2*	*.069*	
		f	*N*	*9*	*1*	*6*	*2*	*10*	*63*	*331*	*+ 7.9*	*195.5*	*- 0.2*	*(-32.5)*	*.051*	
		12	N	1		1		1×	2	7	+ 7.1	203.3	+ 7.5	-90.4	.130	×3→9
		11_1	S				1		1	2	+ 6.6	201.4	+ 5.6	-95.6	.098	
		1_{12}	S	2b	1q				42	247	+ 8.6	200.9	+ 5.1	-74.3	.092	
		11_2	S				1		3	28	+ 7.2	200.0	+ 4.3	-90.1	.074	
		9	S	1		1			3	5	+10.3	199.9	+ 4.1	-52.2	.089	
			S)					4	-	7	+11.1	199.6	+ 3.8	-43.8	.095	
		2_2	N	1		1a			4	30	+ 6.3	199.3	+ 3.6	-104.4	.064	
		2_1	N	1		1a			11	76	+ 6.4	197.9	+ 2.2	-109.9	.040	
		7	S	1		1u			6	(21	+ 9.2	197.6	+ 1.8	-42.0	.047	
		3_0	S	1		1u			3+	13	+ 8.4	197.6	+ 1.8	-57.5	.038	+2+
		3	S	1		1a			15+	(80	+ 8.7	197.1	+ 1.4	-42.9	.035	+14+
		10	N	1b		1a			12	(39	+ 6.9	197.0	+ 1.2	-102.5	.022	
		8	N	1		1a			4	(30	+ 7.2	196.3	+ 0.5	-86.9	.009	×→10↓8
		5_2	S	3t×		1			12+	60	+ 8.6	195.7	- 0.1	+2.3	.026	+6+3+3
		4_0	N				2	2	2	17	+ 8.0	195.2	- 0.5	+33.3	.018	↑5
			S)					1	-	1	+10.7	194.9	- 0.8	+13.2	.064	
			N)					1	-	1	+ 7.0	194.8	- 1.0	+99.0	.017	
			N)					2	-	2	+ 7.9	193.9	- 1.8	+69.9	.035	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		4_{23}	N	3t×		1			8	48	+ 9.4	193.0	- 2.7	+50.1	.061	×→6
			N)					2	-	4	+ 6.3	192.7	- 3.0	+107.2	.055	
			N)					1	-	2	+ 8.8	192.5	- 3.2	+63.4	.063	
		4_1	N	1c	1n				20+	73	+ 9.9	191.8	- 4.0	+55.5	.084	+18+
		(6_2)	N'					1	-	2	+ 9.2	190.3	- 5.5	+69.5	.101	
		U 1_1	*S*	*1*					*34*	-	*+ 8.4*	*200.9*	*+ 5.1*	*-75.8*	*.092*	
		U 1_2	*S*	*1*					*8*	-	*+ 9.1*	*200.7*	*+ 4.9*	*-67.9*	*.091*	
	91	*p*•1	(▽) *N*				(1)		(-)	(19)	+24.7	113.4	-82.4	+66.1	.986	
Sept 15		*3*	*68*	*22*	*3*	*13*	*5*	*20*	*187*	*971*	*{+7.2}*	*{195.8}*		*{+24.2}*	*371*	*1897*
258.275	89		◇-⌑	3	1	2	1	4	35	174	+16.4	205.6	+18.1	-60.0	.344	
G /0636/		*p*	*N*	*1*	*1*			*1*	*17*	*65*	*+16.9*	*210.8*	*+23.3*	*-64.8*	*.421*	
		f	*S*	*2*		*2*	*1*	*3*	*18*	*109*	*+16.2*	*202.5*	*+15.0*	*-57.2*	*.297*	
		1_{1-3}	N	1c	1p				17	64	+16.9	210.9	+23.4	-64.8	.422	
		1_5	N'					1	-	1	+16.1	206.3	+18.8	-62.5	.351	
		2_6	S					1	-	2	+15.4	203.8	+16.3	-61.3	.310	
			S)				1		1	4	+17.0	203.7	+16.2	-56.8	.321	
		2_{3-5}	S	1		1			5	38	+16.1	203.0	+15.5	-58.3	.303	
		2_{12}	S	1		1			12	61	+16.3	202.2	+14.7	-56.3	.294	
		2_7	S)					2	-	4	+14.7	201.0	+13.6	-59.2	.265	
	90		⌑⌑ δ	19	3	7	2	10	141	885	+ 8.4	197.2	+ 9.8	-79.9	.172	
		p	*S*	*11*	*2*	*3*	*1*	*5*	*91*	*565*	*+ 8.5*	*198.6*	*+11.2*	*-82.4*	*.195*	
		f	*N*	*8*	*1*	*4*	*1*	*5*	*50*	*320*	*+ 8.3*	*194.7*	*+ 7.2*	*-75.3*	*.132*	
		12	N				1	1	1	3	+ 6.9	203.5	+16.0	-90.0	.275	↑6
		11_1	S'					1	-	2	+ 6.4	202.1	+14.6	-92.1	.252	
		1_{12}	S	2b	1r				46	254	+ 8.5	200.9	+13.5	-83.4	.233	
		11_2	S	1		1	1×	1	3	9	+ 6.9	200.3	+12.8	-90.3	.222	→5xys×3
		9	S	1		1		1×	2	10	+10.3	199.8	+12.3	-74.7	.219	×2↑11
		2_2	N	1		1a			2	22	+ 6.1	199.5	+12.0	-94.3	.208	
		2_1	N	1		1a			9	62	+ 6.3	198.0	+10.5	-94.4	.183	
		10	N	1b		1a			8	27	+ 6.8	197.3	+ 9.9	-91.9	.171	
		3	S	3	1				31+	(203	+ 8.4	197.1	+ 9.6	-82.2	.168	+19+8+4
		8	N	1		1			4	(20	+ 7.1	196.4	+ 8.9	-89.9	.154	+4×2+
		5_2	S	4		1			9+	(84	+ 8.4	195.3	+ 7.9	-80.5	.138	→8↓6
		4_0	N					2	-	4	+ 7.2	195.1	+ 7.6	-89.7	.132	
			(S)					2	-	3	+10.4	194.3	+ 6.8	-64.0	.130	
			N)					1	-	1	+11.3	193.0	+ 5.5	-52.5	.119	
			N)					1	-	1	+ 8.1	192.7	+ 5.2	-79.4	.092	
		4_{1-3}	N	4t	1p				25	180	+ 9.6	192.3	+ 4.8	-61.9	.095	
		U 1_1	*S*	*1*					*37*	-	*+ 8.4*	*201.1*	*+13.6*	*-83.8*	*.235*	
		U 1_2	*S*	*1*					*9*	-	*+ 8.9*	*200.5*	*+13.1*	*-81.5*	*.227*	
		U 4_3	*N*	*2+*					*6*	-	*+ 9.0*	*193.3*	*+ 5.8*	*-72.4*	*.106*	+↑5
		U 4_2	*N*	*1*					*7*	-	*+ 9.8*	*192.4*	*+ 5.0*	*-61.7*	*.097*	
		U 4_1	*N*	*1*					*12*	-	*+10.0*	*191.7*	*+ 4.2*	*-56.2*	*.088*	
	91	*p*•1	◇ *N*	1			1		2	27	+24.8	113.2	-74.3	+66.2	.957	
Sept 16		*3*	*72*	*23*	*4*	*10*	*3*	*14*	*178*	*1086*	*{+7.2}*	*{187.5}*		*{+24.3}*	*141*	*2083*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
259.320	89		◊ ◊	3		3		2	24	123	+16.6	206.6	+33.0	-70.5	.553	
G /0741/		p•1_{1-3}	N	*1*		*1*			*14*	*60*	*+17.2*	*210.7*	*+37.1*	*-71.1*	*.611*	
		f	S	*2*		*2*		*2*	*10*	*63*	*+16.0*	*202.7*	*+29.0*	*-70.0*	*.498*	
		2_{3-5}	S	1		1		1×	2	21	+16.0	203.3	+29.7	-70.5	.507	×↑
		2_{12}	S	1		1			8	41	+16.1	202.4	+28.7	-69.7	.494	
		2_7	S)					1	-	1	+15.0	201.6	+27.9	-71.6	.478	
	90		◊≠◊ δ	10	3	4	2	8	124	826	+ 8.1	198.7	+25.0	-86.0	.421	
		p	S	*6*	*2*	*2*			*87*	*637*	*+ 8.2*	*199.4*	*+25.7*	*-85.9*	*.432*	
		f	N	*4*	*1*	*2*	*2*	*8*	*37*	*189*	*+ 7.7*	*196.3*	*+22.7*	*-86.4*	*.385*	
			(N)					1	-	3	+ 5.0	204.7	+31.1	-92.2	.517	
		12	N'					1	-	1	+ 6.8	203.5	+29.9	-88.9	.497	
		1_{12}	S	2b	1r				43	268	+ 8.5	201.3	+27.6	-85.4	.462	
		11_2	S	1		1a			2	20	+ 6.8	201.2	+27.5	-89.1	.461	
		2_2	N				1	1	1	49	+ 6.1	199.9	+26.3	-90.7	.442	
		2_1	N	1		1a			13	52	+ 6.3	198.5	+24.8	-90.6	.419	
		10	N'	1		1			2	(5	+ 6.7	197.9	+24.2	-89.6	.409	
		3	S	2b	1u				40+	(345	+ 8.1	197.8	+24.2	-86.1	.407	+34+6
		8	N'				1		1	(3	+ 7.1	196.7	+23.0	-88.7	.390	
			(S)	1		1			2	4	+10.3	194.8	+21.2	-80.1	.362	
		4_3	N'					2	-	5	+ 9.2	193.5	+19.8	-82.6	.339	↑6
		4_{12}	N	2	1n			2×	20	70	+ 9.9	191.9	+18.3	-80.2	.315	×↓
			N)					1	-	1	+11.7	188.2	+14.6	-71.5	.261	
		U 1_1	*S*	*1*					*35*	-	*+ 8.5*	*201.4*	*+27.8*	*-85.4*	*.464*	
		U 1_2	*S*	*1*					*8*	-	*+ 8.5*	*200.8*	*+27.2*	*-85.2*	*.455*	
		U 4_2	*N*	*1*					*8*	-	*+10.0*	*192.3*	*+18.6*	*-79.8*	*.321*	
		U 4_1	*N*	*1*					*12*	-	*+ 9.8*	*191.7*	*+18.1*	*-80.4*	*.311*	
	91	p•1	◊ N	1		1			6	32	+24.6	113.1	-60.6	+65.7	.871	
Sept 17		*3*	*65*	*14*	*3*	*8*	*2*	*10*	*154*	*981*	*{+7.2}*	*{173.7}*		*{+24.5}*	*271*	*1732*
260.173	89		◊ ◊	3		3		2	11	94	+16.5	206.0	+43.6	-73.5	.690	
K /0409/		*p*	N	*1*		*1*		*1*	*6*	*35*	*+17.2*	*210.7*	*+48.3*	*-73.3*	*.747*	
		f	S	*2*		*2*		*1*	*5*	*59*	*+16.2*	*203.2*	*+40.8*	*-73.6*	*.656*	
		1_{1-3}	N	1		1			6	33	+17.2	210.9	+48.5	-73.3	.749	
		1_5	N'					1	-	2	+16.6	208.1	+45.7	-73.7	.717	
		2_{3-5}	S	1		1			3	31	+16.4	203.6	+41.2	-73.3	.661	
		(2_7)	S)					1	-	3	+14.6	203.1	+40.7	-75.8	.653	
		2_{12}	S	1		1			2	25	+16.1	202.8	+40.4	-73.6	.651	
	90		◊≠◊ δ	5	2	3		10	123	829	+ 8.3	199.2	+36.7	-85.7	.596	
		p	S	*2*	*2*			*3*	*97*	*680*	*+ 8.5*	*199.7*	*+37.3*	*-85.4*	*.603*	
		f	N	*3*		*3*		*7*	*26*	*149*	*+ 7.5*	*196.7*	*+34.3*	*-86.8*	*.561*	
			(N)					1	-	2	+ 5.2	202.2	+39.8	-90.5	.640	
		1_{12}	S	1b	1p				55	281	+ 8.9	201.5	+39.1	-84.7	.628	
		2_2	N'					1	-	15	+ 6.2	201.1	+38.7	-89.0	.624	
		11_2	S'					1	-	18	+ 6.9	200.9	+38.5	-87.9	.621	
		2_1	N	1		1u			12	(68	+ 6.5	199.0	+36.6	-88.8	.594	
		3	S	1	1u			1×	42	(377	+ 8.3	198.4	+35.9	-85.8	.585	$×_4$↑
			N					5	-	15	+ 6.0	196.2	+33.8	-89.9	.556	→32↑5
			(S)					1	-	4	+ 9.0	195.1	+32.7	-84.5	.538	
		4_2	N	1		1			4	11	+10.4	192.7	+30.3	-81.5	.504	
		4_1	N	1		1			10	38	+ 9.8	192.0	+29.6	-82.6	.492	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	91	$p\bullet 1$	◇ *N*	1		1			9	29	+24.6	113.4	-49.1	+63.7	.768	
	92	$p\bullet(3_1)$	(Δ) *S*					(1)	(-)	(5)	(-24.5	100.5	-62.0	+120.1	.930)	
Sept 18		*4*	*70*	*9*	*2*	*7*		*13*	*143*	*957*	*{+7.2}*	*{162.4}*		*{+24.6}*		*224 1506*
261.584 G /1401/	89	$p\bullet 1_{1-3}$	▽ *N*					1	1	7	+17.0	211.1	+61.9	-74.5	.877	
	90		◇≠✖ δ	7	2	3	1	4	100	693	+ 8.3	200.0	+56.2	-84.9	.828	
		p	*S*	*5*	*2*	*1*		*3*	*83*	*552*	*+ 8.4*	*200.2*	*+56.4*	*-84.8*	*.830*	
		f	*N*	*2*		*2*	*1*	*1*	*17*	*141*	*+ 8.0*	*199.1*	*+55.4*	*-85.2*	*.819*	
		1_{12}	S	2b	1a				40	245	+ 8.8	201.5	+57.7	-84.1	.842	
			S)					1	-	10	+10.2	201.4	+54.6	-82.5	.840	
		13	S	1		1			4	26	+10.0	200.5	+56.8	-82.8	.833	
		14	N	1		1			7	36	+11.0	199.9	+56.1	-81.5	.826	
		2_1	N]	1		1			9	(90]	+ 6.6	199.8	+56.1	-86.9	.827	
		3	S]	2b	1				39+	(265]	+ 7.7	199.1	+55.4	-85.7	.820	+23+16
		16	N'					1	-	3	+ 8.0	196.0	+52.3	-85.4	.788	
		15	S					1	-	5	+10.3	195.8	+52.1	-82.5	.785	
			(S)					1	-	1	+ 9.6	194.7	+50.9	-83.4	.772	
		4_1	N				1		1	12	+ 9.4	192.4	+48.6	-83.7	.747	
	91	$p\bullet 1$	◇ *N*	1		1			8	16	+24.8	114.1	-29.7	+54.6	.554	
	92		¤≠◇	6	1	5	2	7	47	167	-23.4	98.8	-45.0	+126.2	.806	
		p	*S*	*4*		*4*		*5*	*23*	*103*	*-22.9*	*100.2*	*-43.6*	*+126.4*	*.791*	
		f	*N*	*2*	*1*	*1*	*2*	*2*	*24*	*64*	*-24.2*	*96.5*	*-47.3*	*+125.8*	*.828*	
		1_1	S	1		1			15	55	-21.9	100.7	-43.1	+125.6	.782	
		3_1	S	1		1			2	15	-24.9	100.5	-43.3	+128.8	.800	
			S)					1	-	2	-23.3	100.2	-43.6	+126.8	.794	
		1_2	S'	1		1			2	11	-21.7	99.8	-44.0	+124.8	.789	
		3_2	S	1		1			4	16	-25.1	99.1	-44.7	+128.2	.812	
		1_3	S'					2	-	2	-22.0	99.0	-44.8	+124.8	.797	↑8
		2_2	N				1		1	4	-23.5	99.0	-44.8	+126.4	.805	
			N				1		1	3	-23.6	97.5	-46.3	+125.7	.818	
			(S)					1	-	1	-26.6	97.2	-46.6	+128.6	.835	
			S					1	-	1	-21.7	96.9	-46.9	+123.3	.814	
		2_1	N	1b	1u			1×	20	26	-23.2	96.6	-47.2	+124.8	.823	×4↑
		4	N	1		1a		1×	2	31	-25.1	95.9	-47.8	+126.5	.837	×3←14
Sept 19		*4*	*60*	*14*	*3*	*9*	*4*	*11*	*156*	*883*	*{+7.1}*	*{143.8}*		*{+24.8}*		*181 1007*
262.167 K /0401/	89→	$p\bullet 1_{1-3}$	Δ *N'*					(1)	(-)	(4)	(+16.5	211.6	+75.5	-74.7	.959)	
	90		◇≠✖ δ	5	2	2	4	3	113	571	+ 8.2	200.6	+64.5	-84.4	.900	
		p	*S*	*4*	*2*	*1*	*3*	*2*	*100*	*467*	*+ 8.4*	*200.8*	*+64.7*	*-84.1*	*.901*	
		f	*N*	*1*		*1*	*1*	*1*	*13*	*104*	*+ 7.0*	*199.9*	*+63.8*	*-85.6*	*.895*	
			S	1		1			5	(48]	+10.1	202.5	+66.4	-82.1	.913	
		1_{12}	S	1b	1u				54	(174]	+ 8.7	202.0	+65.9	-83.7	.910	
		13	S']				2		2	35]	+ 9.9	200.6	+64.5	-82.5	.899	
		14	N']					1	-	4]	+11.1	200.4	+64.3	-81.2	.897	
		[2_1	N]	1		1			12	(85]	+ 6.5	200.4	+64.3	-86.2	.899	
		[3	S]	2b	1u				38	(195]	+ 7.4	199.7	+63.6	-85.3	.893	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		16	N				1		1	15	+ 9.0	197.0	+60.9	-83.7	.871	
		17	S'					2	-	8	+ 8.1	196.5	+60.5	-84.7	.867	→17
		15	S				1		1	7	+10.6	195.9	+59.8	-81.9	.860	
	91	*p*•1	◇ *N*	1		1			3	11	+24.7	113.8	-22.3	+48.0	.466	
	92		⌅‡⌅	9	2	4	2	4	75	480	-23.1	98.4	-37.6	+130.5	.741	
		p	*S*	*7*	*1*	*3*		*3*	*40*	*258*	*-22.8*	*100.3*	*-35.8*	*+131.5*	*.722*	
		f	*N*	*2*	*1*	*1*	*2*	*1*	*35*	*222*	*-23.5*	*96.3*	*-39.8*	*+129.5*	*.763*	
		1_{12}	S	4d	1u				26+	136	-22.2	101.1	-35.0	+131.5	.711	+14+5+3+3+
		3_{12}	S	1		1u		1×	7	68	-25.0	99.7	-36.3	+133.4	.742	×2
		1_3	S	1		1			5	30	-21.6	99.5	-36.6	+129.5	.721	
			S)					1	-	2	-20.4	99.3	-36.8	+128.0	.714	
		2_5	N'					1	-	4	-23.5	99.3	-36.8	+131.5	.736	
		1_4	S	1		1			2	12	-21.4	98.5	-37.6	+128.6	.729	train
		2_2	N	1		1			11	33	-22.9	98.0	-38.1	+130.0	.744	
			S)					1	-	10	-21.3	97.6	-38.5	+127.9	.737	
		2_3	N				1		1	15	-22.8	97.3	-38.8	+129.3	.749	
		4	N				1		1	21	-25.2	95.9	-40.2	+131.0	.776	
		2_1	N	1	1a				22	149	-23.5	95.8	-40.3	+129.1	.767	
Sept 20		*4*	*63*	*15*	*4*	*7*	*6*	*8*	*191*	*1066*	*{+7.1}*	*{136.1}*		*{+24.9}*	*204*	*1163*
263.438 G /1030/	90→		◇‡⌅ δ	4	2	2	5		71	534	+ 8.3	200.5	+81.1	-82.7	.986	
		p	*S*	*3*	*2*	*1*	*3*		*60*	*410*	*+ 8.4*	*200.5*	*+81.2*	*-82.6*	*.985*	
		f	*N*	*1*		*1*	*2*		*11*	*124*	*+ 7.8*	*200.4*	*+81.1*	*-83.2*	*.987*	
		1_{12}	S'	1	1a				22	160	+ 8.6	201.6	+82.3	-82.3	.989	
		14	N'				1		1	28	+10.9	201.6	+82.3	-80.0	.989	
		13	S'	1		1			8	72	+ 9.6	201.0	+81.6	-81.4	.987	
		2_1	N'	1		1			9	85	+ 6.6	200.4	+81.1	-84.4	.987	
		3	S'	1	1				27	125	+ 7.6	200.2	+80.9	-83.5	.986	
		16	N'				1		1	11	+ 9.7	197.7	+78.3	-81.6	.977	
		17	S'				2		2	43	+ 8.2	197.5	+78.2	-83.2	.977	
			(S)				1		1	10	+ 9.3	194.8	+75.5	-82.3	.965	
	91	*p*•1	△ *N'*					1	-	2	+24.8	114.0	- 5.3	+15.4	.317	
	92		⌅-⌅	9	2	2	2	8	80	556	-23.2	98.9	-20.4	+147.3	.594	
		p	*S*	*3*	*1*		*1*	*7*	*33*	*267*	*-22.8*	*101.9*	*-17.4*	*+150.7*	*.566*	
		f	*N*	*6*	*1*	*2*	*1*	*1*	*47*	*289*	*-23.6*	*96.1*	*-23.2*	*+144.2*	*.620*	
		1_{1-4}	S	3d	1p				32+	252	-22.7	102.0	-17.3	+150.7	.564	+23+5+4
		3_{12}	S				1	6	1	12	-24.7	100.3	-19.0	+150.4	.600	→10xyx
			S)					1	-	3	-23.3	99.9	-19.4	+148.6	.587	
		2_5	N				1		1	7	-23.9	98.2	-21.1	+147.1	.607	
			N					1	-	1	-21.3	98.0	-21.3	+144.0	.579	
		2_{1-3}	N	4b	1a				37+	225	-23.6	96.2	-23.1	+144.3	.619	+19+7+
		2_4	N	1		1a			6	42	-23.0	95.5	-23.9	+142.9	.619	+6+5
		4	N	1		1			3	14	-25.0	95.2	-24.1	+144.6	.641	
	93↑		△ ▽				1	1	1	4	+22.9	147.7	+28.4	-56.8	.526	
		p•1_1	*N*				*1*		*1*	*3*	*+23.2*	*148.1*	*+28.8*	*-56.6*	*.533*	
		f•2	*S*					*1*	-	*1*	*+22.0*	*146.6*	*+27.3*	*-57.4*	*.506*	
Sept 21		*4*	*62*	*13*	*4*	*4*	*8*	*10*	*152*	*1096*	*{+7.1}*	*{119.3}*		*{+25.1}*	*153*	*1081*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
264.295 G /0705/	91↓	*f•*	Δ *S*					1	-	3	+23.1	114.1	+ 6.1	-19.4	.295	
	92		◧-◧	7	2	1	4	8	93	461	-23.4	98.8	- 9.2	+164.0	.529	
		p	*S*	*3*	*1*	*1*		*4*	*38*	*218*	*-23.1*	*102.3*	*- 5.7*	*+169.7*	*.511*	
		f	*N*	*4*	*1*		*4*	*4*	*55*	*243*	*-23.6*	*95.7*	*-12.3*	*+158.9*	*.545*	
		1_{1-4}	S	2b	1q				36^{+}	206	-23.0	102.4	- 5.6	+169.8	.510	+32+4
		3_{12}	S	1		1		$4^{\times}$	2	12	-24.4	100.5	- 7.5	+167.2	.536	×9xsx
		4_0	N					2	-	5	-25.2	98.0	-10.0	+163.5	.557	→10↑12
			N				1		1	3	-23.7	97.7	-10.3	+162.2	.537	
			N)				1		1	4	-21.8	96.2	-11.8	+158.4	.518	
		2_{1-4}	N	4e	1p				51	220	-23.6	95.7	-12.3	+158.9	.545	
		4	N				1		1	3	-25.2	94.7	-13.3	+158.6	.571	
			N)					2	-	5	-22.8	94.2	-13.8	+156.0	.543	
			N)				1		1	3	-23.5	93.4	-14.6	+155.4	.557	
		U 2_2	*N*	*2*					*7*$^{+}$	-	*-22.9*	*96.2*	*-11.8*	*+159.2*	*.533*	*+4+3 →6*
		U 2_1	*N*	*1*					*35*	-	*-23.8*	*95.7*	*-12.3*	*+159.1*	*.548*	
		U 2_4	*N*	*1*					*7*	-	*-23.3*	*95.0*	*-13.0*	*+157.6*	*.545*	
	93		▽ ◇	2		2	1	3	13	30	+22.9	148.6	+40.6	-63.4	.673	
		p	*N*	*2*		*2*		*1*	*12*	*25*	*+23.0*	*149.1*	*+41.1*	*-63.4*	*.680*	
		f•2	*S*				*1*	*2*	*1*	*5*	*+21.9*	*145.8*	*+37.8*	*-63.8*	*.636*	*→8xyx*
		1_1	N	1		1		$1^{\times}$	9	16	+23.3	149.2	+41.2	-63.0	.682	×4←6
		1_2	N	1		1			3	9	+22.6	149.0	+41.0	-64.0	.677	
Sept 22		*3*	*47*	*9*	*2*	*3*	*5*	*12*	*106*	*494*	*{+7.0}*	*{108.0}*		*{+25.2}*	*177*	*832*
265.478 G /1129/	92		◨-◧	9	2	2		4	69	358	-23.4	99.4	+ 7.0	-167.8	.522	
		p•1_{1-4}	*S*	*2b*	*1r*				*31*$^{+}$	*187*	*-23.3*	*102.9*	*+10.5*	*-161.6*	*.530*	*+25+6*
		f	*N*	*7*	*1*	*2*		*4*	*38*	*171*	*-23.5*	*95.5*	*+ 3.1*	*-174.5*	*.513*	
			(N)					2	-	2	-21.9	98.7	+ 6.3	-168.0	.495	↑8
		4_0	N	1		1		$1^{\times}$	2	8	-25.1	97.7	+ 5.3	-171.0	.540	×4↓
		2_2	N	$2^{\times}$		1			8^{+}	30	-22.8	95.7	+ 3.3	-174.0	.501	+5+3×→6
		2_{41}	N	4t+1a					28	130	-23.6	95.3	+ 2.9	-174.9	.514	+→13
		2_3	N					1	-	1	-22.1	94.4	+ 2.0	-176.2	.490	
		U 2_1	*N*	*3*					*24*$^{+}$	-	*-23.7*	*95.4*	*+ 3.0*	*-174.7*	*.515*	*+13+8+3*
		U 2_4	*N*	*1*					*4*	-	*-23.1*	*94.7*	*+ 2.3*	*-175.8*	*.505*	
	93	*p*	◇ *N*	2		2		1	7	15	+23.7	151.1	+58.7	-66.5	.856	
		1_1	N	1		1			2	5	+24.1	151.8	+59.4	-66.1	.862	
		1_2	N	1		1			5	9	+23.5	150.9	+58.5	-66.7	.854	
			N)					1	-	1	+23.7	149.6	+57.2	-66.2	.843	
	94↑		◇ Δ	1		1		1	2	4	+28.7	61.6	-30.8	+49.5	.593	
		p•1_1	*N*					*1*	-	*1*	*+27.9*	*62.1*	*-30.3*	*+50.2*	*.582*	
		f•2	*S*	*1*		*1*			*2*	*3*	*+28.9*	*61.4*	*-31.0*	*+49.3*	*.597*	
	95↦		Δ ◇	1		1		1	3	13	-20.0	22.1	-70.3	+113.1	.962	
		p•1	*S'*	*1*		*1*			*3*	*11*	*-19.8*	*22.7*	*-69.7*	*+113.0*	*.960*	
		f•2	*N)*					*1*	-	*2*	*-21.2*	*19.0*	*-73.4*	*+113.7*	*.976*	
Sept 23		*4*	*53*	*13*	*2*	*6*		*7*	*81*	*390*	*{+7.0}*	*{ 92.4}*		*{+25.3}*	*130*	*640*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
266.457	92		⌶ ◘	4	2		2	4	79	306	-23.4	99.1	+19.7	-148.5	.592	
G /1059/		*p*	*S*	*1*	*1*			*1*	*55*	*166*	*-23.3*	*102.4*	*+23.0*	*-144.1*	*.614*	
		f	*N*	*3*	*1*		*2*	*3*	*24*	*140*	*-23.6*	*95.3*	*+15.9*	*-153.6*	*.566*	
		1_{1-4}	S	1b	1r				55	165	-23.3	102.4	+23.0	-144.1	.614	
		4_0	N					1	-	1	-25.0	98.2	+18.8	-150.9	.601	
			S					1	-	1	-23.8	97.1	+17.7	-151.2	.580	
		2_2	N				2	2	2	6	-22.9	95.3	+15.8	-153.1	.556	→5yx
		2_{41}	N	3e	1a				22^+	133	-23.6	95.3	+15.9	-153.6	.566	+16+3+2+
	93→	*p*	▽ *N*				1	1	1	10	+23.9	152.7	+73.2	-67.1	.952	
		1_2	N'					1	-	4	+23.6	152.8	+73.3	-67.4	.952	
		1_1	N'				1		1	6	+24.1	152.7	+73.2	-66.9	.952	
	94		⌶-◇	3	1	1		7	21	42	+28.7	62.1	-17.4	+34.9	.460	
		p	*N*	*1*		*1*		*4*	*4*	*12*	*+28.1*	*64.6*	*-14.9*	*+31.9*	*.430*	
		f	*S*	*2*	*1*			*3*	*17*	*30*	*+28.9*	*61.1*	*-18.4*	*+36.0*	*.471*	
		1_1	N	1		1			4	7	+28.2	65.0	-14.4	+31.0	.428	
			N)					2	-	2	+28.3	64.1	-15.4	+32.4	.438	→5
		1_2	N					1	-	2	+27.6	64.1	-15.4	+33.4	.429	
		3	N'					1	-	1	+27.4	63.7	-15.8	+34.4	.430	
		4	S					2	-	2	+28.5	62.5	-17.0	+34.6	.454	→7
		2	S	2b	1n				17^+	27	+29.0	61.0	-18.5	+36.1	.473	+9+8
			S)					1	-	1	+28.2	60.9	-18.5	+37.3	.464	
	95	*p*•1	▽ *S*				1		1	8	-19.6	23.2	-56.3	+116.8	.880	
	96→		▽ ◇	1		1	1		4	17	-20.1	6.5	-73.0	+112.6	.973	
		p•1	*S*	*1*		*1*			*3*	*11*	*-20.2*	*7.7*	*-71.8*	*+113.0*	*.969*	
		f•2	*N*				*1*		*1*	*6*	*-19.9*	*4.3*	*-75.2*	*+112.0*	*.981*	
Sept 24		*5*	*62*	*8*	*3*	*2*	*5*	*12*	*106*	*383*	*{+7.0}*	*{ 79.5}*		*{+25.4}*	*167*	*591*
267.448	92		⌶ ⌶	5	2			2	53	283	-23.5	99.8	+33.4	-134.1	.705	
G /1045/		*p*	*S*	*2*	*1*			*1*	*28*	*198*	*-23.4*	*101.8*	*+35.4*	*-132.3*	*.722*	
		f	*N*	*3*	*1*			*1*	*25*	*85*	*-23.7*	*95.3*	*+28.9*	*-138.3*	*.666*	
		1_{1-4}	S	2b	1r				28	197	-23.4	101.8	+35.4	-132.3	.722	
			S)					1	-	1	-21.1	99.4	+33.0	-131.7	.682	
			N)					1	-	1	-26.2	97.0	+30.6	-139.4	.703	
		2_{41}	N	3d	1a				25^+	84	-23.7	95.3	+28.9	-138.3	.666	+15+6+2+
	94		⌶-◇	4	1	1	1	8	35	113	+28.9	61.6	- 4.8	+10.9	.384	
		p	*N*	*2*		*1*		*5*	*12*	*20*	*+27.8*	*66.2*	*- 0.2*	*+0.5*	*.358*	
		f	*S*	*2*	*1*		*1*	*3*	*23*	*93*	*+29.1*	*60.6*	*- 5.8*	*+13.1*	*.389*	
		1_1	N	2		1			12^+	15	+27.8	66.8	+ 0.4	-0.9	.358	+10+2
		1_2	N					2	-	2	+27.8	65.2	- 1.2	+3.0	.359	
		3	N					3	-	3	+27.5	64.0	- 2.2	+5.5	.355	→6
		4	S'				1	2	1	6	+28.6	62.6	- 3.8	+8.9	.376	↑10→9xy
		2_1	S					1	-	2	+30.0	61.5	- 4.8	+10.6	.401	
		2	S	2b	1n				22^+	85	+29.1	60.4	- 6.0	+13.5	.390	+20+2
	95	*f*•2	△ *N)*					1	-	1	-21.1	18.7	-47.7	+122.1	.817	
	96		◇ ▽	1		1	1		3	15	-19.7	6.5	-59.9	+115.7	.905	
		p•1	*S*				*1*		*1*	*6*	*-19.7*	*8.9*	*-57.5*	*+116.5*	*.889*	
		f•2	*N*	*1*		*1*			*2*	*9*	*-19.7*	*4.9*	*-61.5*	*+115.1*	*.916*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	97	⊐⊏	δ	4	2	2			64	352	+14.3	346.5	-79.9	+76.7	.980	
		p	*N*	*2*	*1*	*1*			*44*	*247*	*+14.2*	*347.7*	*-78.7*	*+77.0*	*.977*	
		f	*S*	*2*	*1*	*1*			*20*	*105*	*+14.7*	*343.6*	*-82.8*	*+76.2*	*.989*	
		1_{12}	N	1c	1a				30	189	+14.1	348.5	-77.9	+77.1	.974	
		3	N]	1		1			14	58]	+14.4	345.2	-81.2	+76.6	.985	
		2_{12}	S	1c	1u				18	74]	+14.5	343.9	-82.5	+76.4	.988	
		4	S	1		1			(2)	31	+15.1	343.0	-83.4	+75.7	.991	
Sept 25		*5*	*65*	*14*	*5*	*4*	*2*	*11*	*155*	*764*	*{+6.9}*	*{ 66.4}*		*{+25.5}*	*168*	*760*
268.595	92	◇ ▣		5	1	1		2	51	256	-23.6	99.9	+48.7	-124.4	.836	*
G /1416/		*p•1_{1-4}*	*S*	*1c*	*1r*				*40*	*223*	*-23.6*	*100.7*	*+49.5*	*-124.0*	*.842*	
		f	*N*	*4*		*1*		*2*	*11*	*33*	*-23.7*	*94.7*	*+43.5*	*-127.2*	*.794*	
			N)					1	-	1	-23.4	95.7	+44.4	-126.3	.800	
		2_1	N	4t×		1q			11+	31	-23.8	94.7	+43.5	-127.3	.794	+2+3+3+
			N)					1	-	1	-22.1	94.2	+43.0	-125.8	.781	×↑8
	94	◇–◇		5		4	1	7	21	78	+28.8	61.4	+10.2	-22.3	.410	
		p	*N*	*1*		*1*	*1*	*1*	*7*	*16*	*+27.4*	*67.0*	*+15.8*	*-34.2*	*.431*	
		f	*S*	*4*		*3*		*6*	*14*	*62*	*+29.2*	*60.0*	*+ 8.7*	*-19.2*	*.405*	
		1_1	N	1		1			6	8	+27.7	68.2	+17.0	-35.7	.444	
		1_2	N'				1		1	5	+27.3	66.6	+15.4	-33.7	.426	
		3	N'					1	-	3	+26.9	64.7	+13.5	-31.1	.404	
		4	S'	1		1		2×	2	9	+28.1	61.9	+10.6	-24.1	.401	×5
			S)					2	-	2	+29.0	60.7	+ 9.5	-20.9	.406	→6↑8sxx
		2_1	S'	1		1			2	4	+29.7	60.1	+ 8.9	-19.0	.414	
		2_2	S'					2	-	4	+28.7	59.9	+ 8.7	-19.6	.397	
		2	S	2b		1			10+	43	+29.4	59.5	+ 8.3	-18.1	.406	+6+4
	95	*f•2*	Δ *N*					1	-	2	-21.5	18.7	-32.6	+132.5	.681	
	96	Δ Δ						2	-	5	-19.6	8.0	-43.3	+122.8	.770	
		p•1	*S*					*1*	-	*3*	*-19.8*	*9.7*	*-41.6*	*+123.9*	*.755*	
		f•2	*N*					*1*	-	*2*	*-19.4*	*5.4*	*-45.9*	*+121.1*	*.793*	
	97	⊐–⊏		4	2	1		3	56	330	+14.6	345.7	-65.6	+77.1	.905	
		p	*N*	*2*	*1*			*2*	*28*	*203*	*+14.3*	*347.3*	*-64.0*	*+77.5*	*.894*	
		f	*S*	*2*	*1*	*1*		*1*	*28*	*127*	*+15.1*	*343.2*	*-68.0*	*+76.5*	*.922*	
		1_{c-2}	N	2d	1q				28	195	+14.3	347.4	-63.9	+77.5	.893	
			N)					1	-	1	+13.3	346.2	-65.0	+78.5	.902	
		2_0	S'	1		1		1	3	16	+14.9	345.0	-66.3	+76.8	.911	
		3	N'					1	-	7	+14.8	344.1	-67.1	+76.9	.917	
		2_{12}	S'	1b	1q				25	111	+15.1	342.9	-68.3	+76.5	.924	
		U 1_{12}	*N*	*1*					*25*	-	*+14.3*	*347.5*	*-63.7*	*+77.5*	*.892*	
		U 1_{01}	*N*	*1*					*3*	-	*+14.3*	*346.4*	*-64.9*	*+77.4*	*.901*	
	98	*p•1*	Δ *N*					1	-	6	+33.3	340.9	-70.3	+57.0	.940	
Sept 26		*6*	*74*	*14*	*3*	*6*	*1*	*16*	*128*	*677*	*{+6.9}*	*{ 51.3}*		*{+25.6}*	*141*	*716*
269.491	92	Δ ▣		1	1		1	2	43	262	-23.5	99.7	+60.3	-119.5	.917	
G /1147/		*p•1_{1-4}*	*S*	*1c*	*1r*				*42*	*249*	*-23.5*	*100.0*	*+60.6*	*-119.4*	*.919*	
		f↓2_1	*N*				*1*	*2×*	*1*	*13*	*-23.4*	*94.6*	*+55.1*	*-121.3*	*.883*	×6
continued																

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	94	◊–◊		3		2	1	6	14	50	+28.6	62.9	+23.5	-42.1	.521	
		p	*N*	*1*		*1*	*1*		*6*	*18*	*+27.7*	*69.0*	*+29.6*	*-49.8*	*.574*	
		f	*S*	*2*		*1*		*6*	*8*	*32*	*+29.1*	*59.5*	*+20.0*	*-37.8*	*.490*	
		1_1	N	1		1			5	14	+27.8	69.2	+29.8	-49.9	.577	
		1_2	N				1		1	4	+27.5	68.1	+28.7	-49.4	.563	
			S)					1	-	1	+27.7	63.8	+24.3	-44.9	.518	
		4	S					2	-	2	+28.3	61.7	+22.3	-41.9	.503	→6↑7
		2_2	S'					1	-	2	+28.8	59.9	+20.5	-39.0	.490	
		2_1	S					1	-	3	+29.9	59.7	+20.3	-37.1	.501	
		2	S	2		1		1×	8+	24	+29.2	59.1	+19.6	-37.2	.487	+6+2 ×↓
	96↓	*p*•1	Δ *S*					1	-	1	-20.1	10.0	-29.5	+133.5	.639	
	97		ж–✖	6	2	1	1	3	58	354	+14.6	345.3	-54.2	+76.9	.807	
		p	*N*	*3*	*1*			*1*	*34*	*194*	*+14.4*	*347.1*	*-52.3*	*+77.1*	*.789*	
		f	*S*	*3*	*1*	*1*	*1*	*2*	*24*	*160*	*+14.9*	*343.1*	*-56.4*	*+76.6*	*.829*	
		1_{o-2}	N	3b	1r				34	191	+14.4	347.1	-52.3	+77.1	.789	
			N)					1	-	3	+13.2	346.1	-53.4	+78.6	.799	
		2_o	S	1		1	1×		3	10	+14.7	345.3	-54.2	+76.7	.808	×з
		2_3	S'					1	-	2	+14.5	344.4	-55.1	+77.1	.816	
		2_{12}	S	2b	1q				21+	147	+14.9	342.9	-56.6	+76.6	.831	+19+2
			S)					1	-	1	+13.1	342.7	-56.8	+78.1	.833	
		U 1_{12}	*N*	*1*					*24*	-	*+14.3*	*347.3*	*-52.1*	*+77.1*	*.787*	
		U 1_{o2}	*N*	*1*					*7*	-	*+14.7*	*346.8*	*-52.6*	*+76.8*	*.792*	
		U 1_{o1}	*N*	*1*					*3*	-	*+14.3*	*346.5*	*-51.9*	*+77.3*	*.795*	
	98		Δ ▽				1	1	1	13	+32.9	340.6	-58.8	+55.8	.869	
		p•1	*N*				*1*		*1*	*9*	*+32.7*	*341.9*	*-57.5*	*+55.8*	*.860*	
		f•2	*S*					*1*	-	*4*	*+33.3*	*337.8*	*-61.7*	*+55.9*	*.890*	
	99↑		Δ Δ					2	-	3	+17.9	44.6	+ 5.2	-24.3	.211	
		p•1	*N*					*1*	-	*2*	*+17.4*	*44.6*	*+ 5.2*	*-25.3*	*.204*	
		f•2	*S*					*1*	-	*1*	*+18.8*	*44.6*	*+ 5.1*	*-22.3*	*.224*	
Sept 27		*6*	*75*	*10*	*3*	*3*	*4*	*15*	*116*	*683*	{+6.9}	{ 39.4}		{+25.7}	*128*	*731*
270.229 G /0530/	92→	*p*•1_{1-4}	ж *S*	3t×1r					22+	245	-23.6	99.3	+69.6	-116.8	.964	+15+5+2 ×↑12
	94		◊ ◊	2		2		3	10	24	+28.6	62.6	+32.9	-50.5	.618	
		p•1_{12}	*N*	*1*		*1*			*4*	*8*	*+27.4*	*69.6*	*+39.9*	*-56.6*	*.685*	
		f	*S*	*1*		*1*		*3*	*6*	*16*	*+29.2*	*59.0*	*+29.3*	*-47.5*	*.584*	
		2_1	S					1	-	3	+29.6	59.8	+30.1	-47.4	.595	
		2_2	S'					1	-	1	+28.5	59.5	+29.9	-48.8	.584	
		2	S	1		1		1×	6	12	+29.1	58.8	+29.1	-47.4	.581	×←
	97		ж–ж	6	2	1	1	2	47	333	+14.7	345.6	-44.0	+75.8	.696	
		p•1_{o-2}	*N*	*2b*	*1r*				*25*	*191*	*+14.6*	*347.1*	*-42.5*	*+75.8*	*.677*	
		f	*S*	*4*	*1*	*1*	*1*	*2*	*22*	*142*	*+14.8*	*343.5*	*-46.1*	*+75.9*	*.721*	
		2_o	S				1	1	1	5	+14.9	345.4	-44.3	+75.6	.699	
		2_3	S	1		1			2	8	+14.5	344.9	-44.7	+76.2	.704	
			S)					1	-	2	+14.3	344.1	-45.5	+76.6	.713	×→7↑6 +1$\bar{1}$+$\bar{6}$+2
		2_{12}	S	3b×1p					19+	127	+14.8	343.3	-46.3	+75.9	.723	
		U 1_{12}	*N*	*1*					*22*	-	*+14.5*	*347.2*	*-42.5*	*+75.9*	*.677*	
		U 1_{o2}	*N*	*1*					*3*	-	*+14.9*	*346.9*	*-42.8*	*+75.4*	*.681*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	98		▽ △				1	3	1	21	+32.9	339.5	-50.2	+53.6	.803	
		p	*N*					*3*	–	*10*	*+32.3*	*341.5*	*-48.2*	*+53.7*	*.784*	
		f•2	*S*				*1*		*1*	*11*	*+33.4*	*337.6*	*-52.1*	*+53.6*	*.820*	
		1	N					1	–	4	+32.4	342.9	-46.8	+53.0	.773	
			(N)					2	–	6	+32.2	340.6	-49.1	+54.1	.792	
	99		▽ ◊	1		1	1		4	13	+17.6	46.3	+16.7	-54.9	.336	
		p•1	*N*	*1*		*1*			*3*+	*10*	*+17.4*	*46.8*	*+17.2*	*-56.3*	*.340*	*+2+*
		f•2	*S*				*1*		*1*	*3*	*+18.4*	*44.7*	*+15.0*	*-50.4*	*.321*	
	100	*p*•1	(◊) *S*	(1)		(1)			(-)	(90)	-20.9	307.5	-82.2	+111.8	.997	
Sept 28		*6*	*74*	*13*	*3*	*5*	*3*	*8*	*84*	*726*	*{+6.8}*	*{ 29.7}*		*{+25.8}*	*103*	*709*
271.337 G /0806/	94		▽ ▽				2	4	2	13	+28.3	64.2	+49.1	-58.6	.780	
		p	*N*				*1*	*2*	*1*	*7*	*+27.3*	*68.6*	*+53.6*	*-61.3*	*.818*	
		f	*S*				*1*	*2*	*1*	*6*	*+29.5*	*59.0*	*+43.9*	*-55.5*	*.735*	
		1_{12}	N'				1		1	4	+27.2	69.7	+54.7	-61.6	.827	
			N)					1	–	2	+27.3	67.7	+52.7	-61.0	.810	
			N)					1	–	1	+27.4	66.2	+51.2	-60.5	.797	
		(2_1)	S					2	–	2	+29.7	59.5	+44.5	-55.6	.741	→5
		2	S				1		1	4	+29.4	58.7	+43.6	-55.5	.732	
	97		¤≠¤	4	2		1	6	49	300	+14.8	345.7	-29.3	+72.0	.500	
		p	*N*	*1*	*1*			*1*	*30*	*189*	*+14.7*	*346.9*	*-28.1*	*+71.6*	*.483*	
		f	*S*	*3*	*1*		*1*	*5*	*19*	*111*	*+14.9*	*343.8*	*-31.2*	*+72.5*	*.528*	
		1_{12}	N	1b	1r				30	188	+14.7	346.9	-28.1	+71.6	.483	
			(S)					2	–	4	+17.0	345.7	-29.3	+67.7	.509	→11
		2_0	S					2	–	3	+15.4	345.2	-29.8	+71.1	.509	
		2_3	S				1		1	11	+14.4	344.6	-30.5	+73.3	.515	
		2_{12}	S	3t	1n				18	92	+14.9	343.6	-31.4	+72.7	.531	
			(S)					1	–	1	+14.1	343.3	-31.7	+74.1	.532	
		5	N					1	–	1	+13.1	342.7	-32.4	+75.2	.540	
		U 2_1	*S*	*2*					*12*+	–	*+14.7*	*343.9*	*-31.2*	*+72.9*	*.527*	*+9+3*
		U 2_2	*S*	*1*					*6*+	–	*+15.2*	*343.2*	*-31.9*	*+72.2*	*.538*	*+5+*
	98	*f*•2	▽ *S*				1		1	3	+33.1	336.4	-38.7	+48.4	.702	
	99		◊–◊	3		2	1	5	10	42	+17.9	45.9	+30.8	-66.8	.532	
		p	*N*	*1*		*1*		*4*	*4*	*22*	*+17.9*	*47.1*	*+32.0*	*-67.4*	*.549*	
		f	*S*	*2*		*1*	*1*	*1*	*6*	*20*	*+17.9*	*44.6*	*+29.5*	*-66.1*	*.514*	
		1	N	1		1n		1×	4+	16	+17.9	47.3	+32.3	-67.6	.552	+3+ ×↓
			N)					3	–	6	+18.0	46.4	+31.3	-66.8	.540	
		2_2	S				1	1×	1	5	+17.7	45.3	+30.2	-66.9	.524	$\times_2$
		2_1	S	2		1n			5+	15	+18.0	44.3	+29.3	-65.8	.511	+2+2+
	100		△ ¤	1	1			1	21	198	-20.5	308.5	-66.6	+114.5	.945	
		p•1	*S*	*1b*	*1a*				*21*	*188*	*-20.4*	*309.0*	*-66.1*	*+114.5*	*.943*	
		f•2	*N'*					*1*	–	*10*	*-21.8*	*299.0*	*-76.0*	*+113.6*	*.985*	
	101		▽ △				1	1	1	6	+42.1	50.6	+35.5	-35.9	.736	*
		p•	*N)*					*1*	–	*2*	*+41.2*	*52.7*	*+37.7*	*-38.2*	*.745*	
		f•	*S)*				*1*		*1*	*4*	*+42.5*	*49.5*	*+34.4*	*-34.8*	*.732*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	102 ↑		Δ Δ					3	-	5	-25.2	30.6	+15.5	-155.3	.581	
		p•	*S*					*2*	-	*4*	*-25.1*	*31.1*	*+16.0*	*-154.5*	*.583*	*↑5*
		f•2	*N'*					*1*	-	*1*	*-25.4*	*28.5*	*+13.5*	*-158.3*	*.572*	
	103 ↦		▽ ⌑	1	1		1	1	17	119	+20.7	301.4	-73.6	+70.4	.954	
		p•1	*N*	*1c*	*1q*				*16*	*106*	*+20.8*	*301.8*	*-73.2*	*+70.3*	*.952*	
		f	*S*				*1*	*1*	*1*	*13*	*+19.5*	*297.7*	*-77.3*	*+71.5*	*.971*	
			S)					1	-	2	+20.3	298.9	-76.1	+70.8	.966	
		2	S				1		1	11	+19.4	297.5	-77.5	+71.6	.972	
Sept 29		*8*	*97*	*9*	*4*	*2*	*7*	*21*	*101*	*686*	*{+6.8}*	*{ 15.1}*		*{+25.9}*	*131*	*827*
272.386 G /0916/	97		◊ ≠ ⧓	7	1	3	3	3	52	287	+14.7	346.0	-15.2	+60.8	.293	
		p	*N*	*4*	*1*	*1*			*36*	*224*	*+14.6*	*346.6*	*-14.6*	*+60.0*	*.283*	
		f	*S*	*3*		*2*	*3*	*3*	*16*	*63*	*+14.8*	*343.6*	*-17.6*	*+63.5*	*.328*	
		1_{12}	N	3t	1p				33	211	+14.7	346.8	-14.4	+59.6	.281	
		2_0	S'					1	-	1	+15.5	345.6	-15.7	+58.9	.305	
		2_3	S'				1		1	2	+14.5	344.9	-16.3	+63.0	.307	
		2_1	S	1b		1		2×	8	34	+14.5	344.2	-17.0	+63.6	.318	×←
		5	N	1		1			3	13	+13.4	344.0	-17.2	+67.2	.313	
		2_2	S				2		2	6	+15.2	343.1	-18.1	+62.9	.338	
		6	S	2		1			5	20	+15.2	342.6	-18.6	+63.7	.345	
		U 1_1	*N*	*1*					*26*	-	*+14.8*	*347.0*	*-14.3*	*+59.0*	*.279*	
		U 1_2	*N*	*2*					*7+*	-	*+14.3*	*346.1*	*-15.1*	*+61.6*	*.288*	*+4+3*
	/98/															INTERMITTENT
	99		◊ ▽	2		1	2	6	10	34	+17.7	45.3	+44.1	-71.4	.702	
		p	*N*				*2*	*4*	*2*	*13*	*+17.3*	*47.8*	*+46.6*	*-72.6*	*.730*	
		f	*S*	*2*		*1*		*2*	*8*	*21*	*+18.0*	*43.8*	*+42.6*	*-70.7*	*.684*	
			N)					1	-	2	+17.1	48.8	+47.6	-73.0	.740	
		1	N				1	2	1	8	+17.3	48.0	+46.8	-72.5	.732	
			N)					1	-	1	+17.8	47.1	+45.9	-71.7	.722	
			N)				1		1	2	+17.0	46.6	+45.4	-72.8	.715	
		2_2	S					2	-	4	+18.0	44.6	+43.4	-70.9	.694	
		2_1	S	2		1			8+	17	+18.0	43.6	+42.4	-70.7	.682	+5+3
	100		▽ ⧓	1	1		1		35	185	-20.7	308.4	-52.8	+119.3	.856	
		p•1	*S*	*1b*	*1q*				*34*	*180*	*-20.7*	*308.7*	*-52.5*	*+119.4*	*.854*	
		f•2	*N*				*1*		*1*	*5*	*-22.0*	*298.8*	*-62.5*	*+117.2*	*.926*	
	101 ↓		▽ Δ				1	1	1	4	+41.8	50.0	+48.8	-43.0	.826	
		p•	*N)*					*1*	-	*2*	*+41.6*	*51.0*	*+49.8*	*-43.5*	*.832*	
		f•	*S)*				*1*		*1*	*2*	*+41.9*	*49.0*	*+47.8*	*-42.4*	*.820*	
	102		Δ Δ					2	-	4	-25.7	29.0	+27.8	-141.2	.674	
		p•1	*S*					*1*	-	*1*	*-25.5*	*30.0*	*+28.8*	*-140.1*	*.681*	
		f•2	*N*					*1*	-	*3*	*-25.7*	*28.6*	*+27.4*	*-141.6*	*.671*	
	103		◊ ⌑	2	1	1			21	112	+20.5	301.0	-60.2	+70.2	.865	
		p•1	*N*	*1c*	*1r*				*18*	*96*	*+20.7*	*301.6*	*-59.6*	*+69.9*	*.861*	
		f•2	*S*	*1*		*1*			*3*	*16*	*+19.3*	*297.6*	*-63.6*	*+71.7*	*.892*	
Sept 30		*6*	*78*	*12*	*3*	*5*	*7*	*12*	*119*	*626*	*{+6.7}*	*{ 1.2}*		*{+26.0}*	*172*	*911*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
ROT No 1660																
273.480	97		◇+▣	3	1	1	4	2	43	243	+14.5	346.4	- 0.3	+2.6	.137	
G /1131/		*p*	*N*	*2*	*1*			*1*	*36*	*217*	*+14.5*	*346.7*	*0.0*	*+0.6*	*.136*	
		f	*S*	*1*		*1*	*4*	*1*	*7*	*26*	*+14.5*	*343.9*	*- 2.9*	*+19.3*	*.146*	
		1_{12}	N	2	1p				36	215	+14.5	346.7	0.0	+0.4	.136	
		2_3	S'				1		1	2	+14.8	345.1	- 1.7	+11.3	.145	
		2_1	S	1		1			3	11	+14.4	344.6	- 2.2	+15.7	.139	
		5	N					1	-	2	+13.2	344.0	- 2.8	+22.5	.124	
		6_2	S				1	1	1	5	+14.2	343.5	- 3.3	+22.9	.143	
		6_1	S				2		2	8	+14.9	343.0	- 3.8	+24.1	.158	
		U 1_1	*N*		*1b*				*24*	-	*+14.5*	*347.0*	*+ 0.2*	*-1.6*	*.137*	
		U 1_2	*N*		*1b*				*12*	-	*+14.3*	*346.2*	*- 0.6*	*+4.4*	*.134*	
	/98/															INTERMITTENT
	99 ↓		Δ ◇	1		1		2	4	12	+17.0	47.8	+61.0	-74.3	.871	
		p	*N*	*1*		*1*		*1*	*4*	*10*	*+16.8*	*48.5*	*+61.7*	*-74.5*	*.877*	
		f•2_1	*S'*					*1*	-	*2*	*+17.8*	*44.1*	*+57.3*	*-73.1*	*.840*	
		1	N'	1		1			4	8	+16.7	48.6	+61.8	-74.6	.878	
			N)					1	-	2	+17.1	48.1	+61.3	-74.1	.874	
	100		▽ ▣	1	1		1	3	24	177	-20.6	308.7	-38.1	+126.9	.725	
		*p•*1	*S*	*1c*	*1r*				*23*	*168*	*-20.5*	*309.2*	*-37.6*	*+127.1*	*.720*	
		f	*N*				*1*	*3*	*1*	*9*	*-22.4*	*299.8*	*-47.0*	*+123.8*	*.815*	
		2_2	N)					1	-	1	-23.1	302.3	-44.5	+125.8	.797	
			N)					1	-	1	-21.3	300.5	-46.3	+122.9	.804	
		2_1	N)					1	-	2	-23.6	300.1	-46.7	+125.2	.818	
		2	N'				1		1	5	-22.0	299.1	-47.7	+123.0	.819	
	102 ↓		Δ Δ					2	-	6	-26.1	29.3	+42.5	-130.2	.797	
		*p•*1	*S'*					*1*	-	*4*	*-25.8*	*30.0*	*+43.2*	*-129.5*	*.801*	
		*f•*2	*N'*					*1*	-	*2*	*-26.6*	*27.9*	*+41.1*	*-131.7*	*.790*	
	103		◇ ▣	2	1	1		1	22	116	+20.3	301.3	-45.5	+68.2	.723	
		*p•*1	*N*	*1c*	*1r*				*17*	*105*	*+20.4*	*301.6*	*-45.2*	*+68.0*	*.720*	
		f	*S*	*1*		*1*		*1*	*5*	*11*	*+19.3*	*298.1*	*-48.7*	*+70.1*	*.756*	
		2	S	1		1			5	10	+19.2	298.1	-48.7	+70.3	.756	
			S)					1	-	1	+20.6	298.0	-48.8	+68.5	.759	
Oct 1		*5*	*68*	*7*	*3*	*3*	*5*	*10*	*93*	*554*	*{+6.7}*	*{346.8}*		*{+26.0}*	*152*	*904*
274.363	97		◇-▣	3	1	1	1	5	40	252	+14.5	346.6	+11.5	-54.3	.238	
K /0842/		*p*	*N*	*2*	*1*		*1*		*38*	*228*	*+14.4*	*346.8*	*+11.7*	*-54.9*	*.240*	
		f	*S*	*1*		*1*		*5*	*2*	*24*	*+14.9*	*344.5*	*+ 9.3*	*-47.7*	*.214*	
		1_{12}	N	2	1p				37	216	+14.5	346.8	+11.7	-54.8	.241	
		1_3	N				1		1	12	+13.4	346.4	+11.3	-57.6	.226	
		(2_0)	S'					1	-	1	+17.7	345.8	+10.6	-48.2	.239	
		2_1	S	1		1			2	14	+14.5	344.8	+ 9.6	-49.5	.214	
		2_4	S					2	-	3	+16.2	344.6	+ 9.5	-43.6	.231	→8
		6_2	S					2	-	6	+14.6	343.6	+ 8.4	-45.5	.200	→7
		U 1_1	*N*		*1b*				*31*	-	*+14.5*	*347.0*	*+11.8*	*-54.9*	*.243*	
		U 1_2	*N*		*1b*				*6*	-	*+14.2*	*346.2*	*+11.0*	*-54.3*	*.229*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
/98/																INTERMITTENT
	100	p•1	▣ S	1b	1r				31	187	-20.4	308.7	-26.5	+136.7	.611	
	103		△ ◇	1		1		1	13	88	+20.4	301.3	-33.9	+63.9	.584	
		p•1	*N*	*1c*		*1r*			*13*	*86*	*+20.4*	*301.4*	*-33.8*	*+63.8*	*.583*	
		f•2	*S'*					*1*	-	*2*	*+19.6*	*298.1*	*-37.0*	*+66.6*	*.620*	
Oct 2		*3 49*		*5*	*2*	*2*	*1*	*6*	*84*	*527*	{+6.6}	{335.1}		{+26.1}	*148*	*928*
275.412	97		▽-▣	2	1	1	5	7	40	214	+14.8	346.7	+25.4	-69.7	.444	
G /0954/		*p*	*N*	*2*	*1*	*1*	*3*		*38*	*196*	*+14.8*	*346.9*	*+25.6*	*-69.9*	*.448*	
		f	*S*				*2*	*7*	*2*	*18*	*+15.0*	*344.2*	*+22.9*	*-67.7*	*.409*	
		1_1	N	1b	1p		1		33	159	+15.0	347.1	+25.8	-69.5	.451	
		1_3	N				2		2	4	+12.8	346.9	+25.6	-74.3	.439	
		1_2	N	1		1a			3	33	+14.0	346.1	+24.8	-71.2	.432	
		2_4	S					4	-	4	+17.3	344.7	+23.4	-62.9	.428	→8
		2_1	S					1	-	3	+14.4	344.7	+23.4	-69.3	.413	
		6_2	S				2	2	2	11	+14.3	343.9	+22.6	-69.0	.401	↑9yxy
	98		▽-◇	1		1	5	5	10	56	+31.5	339.0	+17.7	-31.3	.501	
		p	*N*	*1*		*1*	*1*	*3*	*6*	*28*	*+32.1*	*339.6*	*+18.4*	*-31.5*	*.514*	
		f	*S*				*4*	*2*	*4*	*28*	*+30.9*	*338.3*	*+17.0*	*-31.1*	*.488*	
		3	N	1		1	1^{x}		6	22	+31.9	339.8	+18.6	-32.0	.513	$\times_3\downarrow$
			N					1	-	4	+33.1	339.3	+18.0	-29.9	.522	
			N)					1	-	1	+33.3	338.8	+17.6	-29.0	.521	
		4_2	S				3		3	22	+30.7	338.6	+17.3	-31.7	.488	
		5	N'					1	-	1	+32.1	337.9	+16.6	-29.1	.500	
		6	S					1	-	1	+32.6	337.6	+16.3	-28.2	.503	
		4_1	S				1		1	4	+31.2	337.4	+16.2	-29.6	.485	
			S)					1	-	1	+32.1	336.1	+15.3	-27.3	.490	
	100	p•1	▣ S	1b	1r				27	178	-20.6	308.4	-12.9	+155.3	.502	
	103	*p*	▣ *N*	1	1			1	16	83	+20.5	301.3	-20.0	+52.5	.406	
		1	N	1c	1r				16	82	+20.5	301.3	-20.0	+52.5	.406	
			(N)					1	-	1	+19.8	300.0	-21.3	+55.3	.418	
Oct 3		*4 59*		*5*	*3*	*2*	*10*	*13*	*93*	*531*	{+6.6}	{321.3}		{+26.2}	*165*	*940*
276.392	97		▽-▣	2	1	1	3	5	32	194	+15.2	347.0	+38.6	-73.9	.630	
G /0924/		*p*	*N*	*2*	*1*	*1*		*2*	*29*	*168*	*+14.9*	*347.3*	*+38.9*	*-74.3*	*.633*	
		f	*S*				*3*	*3*	*3*	*26*	*+16.7*	*345.1*	*+36.7*	*-70.9*	*.609*	
		1_1	N	1b	1a				27	160	+15.0	347.4	+39.0	-74.2	.634	
			N					1	-	1	+13.3	347.4	+39.0	-76.9	.631	
			N)					1	-	1	+12.9	346.2	+37.8	-77.4	.615	
		1_2	N	1		1			2	6	+13.5	346.0	+37.6	-76.3	.613	
		2_4	S				1	1^{x}	1	16	+17.9	345.6	+37.2	-69.1	.618	$\times_4$←8↓7
		2_1	S'					1	-	3	+14.3	344.8	+36.5	-74.8	.599	
		6_2	S				2	1^{x}	2	7	+15.0	344.2	+35.8	-73.4	.591	$\times_2$

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	98		◇-⌅	4	1	2		4	35	164	+31.3	339.1	+30.7	-45.2	.617	
		p	*N*	*2*	*1*			*2*	*24*	*116*	*+31.3*	*340.3*	*+31.9*	*-46.3*	*.628*	
		f	*S*	*2*		*2*		*2*	*11*	*48*	*+31.3*	*336.2*	*+27.8*	*-42.8*	*.588*	
		3	N	2b	1p				24+	113	+31.3	340.4	+32.0	-46.3	.629	+21+2+
			N)					1	-	1	+31.0	338.6	+30.2	-45.3	.609	
		5	N					1	-	2	+31.3	338.0	+29.6	-44.3	.606	
		4_2	S					2	-	4	+31.1	336.7	+28.3	-43.6	.591	
		6	S	1		1			4	19	+32.2	336.5	+28.2	-42.0	.599	
		4_1	S	1		1			7	25	+30.7	335.8	+27.4	-43.3	.580	
	100		▽-⌅	1	1		1	6	31	177	-20.9	307.1	- 1.3	+177.6	.464	
		p	*S*	*1*	*1*			*1*	*30*	*162*	*-20.7*	*307.9*	*- 0.5*	*+178.9*	*.459*	
		f	*N*				*1*	*5*	*1*	*15*	*-23.2*	*299.2*	*- 9.1*	*+163.7*	*.518*	
		1	S	1b	1r				30	160	-20.7	307.9	- 0.5	+179.0	.459	
			S)					1	-	2	-23.0	305.0	- 3.4	+173.7	.498	
		2_3	N)				1		1	6	-23.0	301.0	- 7.4	+166.5	.509	
		2_2	N)					1	-	1	-23.8	299.4	- 8.9	+164.3	.525	
		2_1	N)					2	-	3	-22.9	299.1	- 9.2	+163.2	.514	
			N)					2	-	5	-23.5	297.2	-11.1	+160.5	.531	→6↑5
	103		△ ◇	1		1		1	12	86	+20.5	300.9	- 7.5	+26.7	.273	
		p•1	*N*	*1c*		*1r*			*12*	*84*	*+20.5*	*301.0*	*- 7.4*	*+26.5*	*.272*	
		f•	*S*					*1*	-	*2*	*+21.5*	*297.1*	*-11.2*	*+34.9*	*.318*	
Oct 4		*4*	*61*	*8*	*3*	*4*	*4*	*16*	*110*	*621*	*{+6.5}*	*{308.4}*		*{+26.2}*	*183*	*1038*
277.625 G /1500/	97	*p•1₁*	⌅ *N*	1c	1a*				25	134	+14.8	347.7	+55.6	-76.5	.823	
	98		⌅ ⌅	6	2	4	1	5	60	265	+30.7	339.1	+47.0	-54.9	.769	
		p	*N*	*3*	*1*	*2*	*1*	*3*	*35*	*174*	*+30.8*	*341.1*	*+49.0*	*-55.5*	*.789*	
		f	*S*	*3*	*1*	*2*		*2*	*25*	*91*	*+30.5*	*335.1*	*+43.0*	*-53.7*	*.733*	
		3_3	N)					1	-	4	+30.7	344.4	+52.3	-56.7	.817	train
		3_2	N	1		1			2	9	+30.5	343.5	+51.5	-56.6	.809	
		7	N				1	1×	1	11	+31.7	342.1	+50.0	-54.8	.800	×4
		3_1	N	1		1			6	22	+30.5	342.0	+49.9	-56.1	.796	
		3	N	1b	1a				26	123	+30.8	340.7	+48.6	-55.4	.785	
		5	N					1	-	5	+30.7	338.2	+46.1	-54.6	.762	
		6	S	1		1		2×	7	14	+31.8	335.9	+43.8	-52.3	.746	×4→
		4_2	S	1		1			2	5	+31.0	335.0	+42.9	-53.0	.734	
		4_1	S	1c	1a				16	72	+30.2	335.0	+42.9	-54.0	.730	
	100		△ ⌅	2	1			6	37	165	-21.2	306.7	+14.6	-152.9	.521	
		p•1	*S*	*2b*	*1p*			*1*	*37+*	*155*	*-21.0*	*307.2*	*+15.1*	*-152.0*	*.521*	*+24+13*
		f	*N*					*5*	-	*10*	*-23.5*	*299.2*	*+ 7.1*	*-167.1*	*.513*	
		2_4	N)					1	-	1	-24.0	300.5	+ 8.5	-165.1	.525	
		2_3	N)					1	-	1	-22.6	300.4	+ 8.4	-164.5	.505	
		2_2	N)					2	-	5	-24.1	299.2	+ 7.1	-167.4	.522	
		2_1	N)					1	-	3	-22.6	298.4	+ 6.3	-168.2	.498	
	103		△ ⌅	1	1			1	16	73	+20.3	300.6	+ 8.5	-30.0	.278	
		p•1	*N*	*1c*	*1r*				*16*	*72*	*+20.3*	*300.6*	*+ 8.5*	*-30.1*	*.278*	
		f•	*S)*					*1*	-	*1*	*+20.8*	*297.4*	*+ 5.3*	*-19.3*	*.264*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	104→		(◇ ◇)	2		2			-	59	+ 7.5	206.9	-85.2	+83.0	.996	* *Old c*
		p•1		*S (1)*		*(1)*			*(-)*	*(35)*	*+ 8.2*	*207.3*	*-84.8*	*+82.4*	*.995*	
		f•2		*N (1)*		*(1)*			*(-)*	*(24)*	*+ 6.6*	*206.4*	*-85.7*	*+83.9*	*.997*	
Oct 5		*5*	*68*	*12*	*5*	*6*	*1*	*12*	*138*	*696*	*{+6.5}*	*{292.1}*		*{+26.2}*	*199*	*923*
278.453	97		△ ℍ	1	1			2	26	155	+14.9	347.8	+66.6	-76.6	.913	
G /1053/		$p•1_1$		*N*	*1b*	*1a**			*26*	*151*	*+14.9*	*347.9*	*+66.7*	*-76.6*	*.914*	
		f•		*S)*				*2*	-	*4*	*+16.2*	*344.8*	*+63.7*	*-75.1*	*.893*	
	98		◇-ℍ	4	1	3	2	8	38	228	+30.4	339.2	+58.1	-58.2	.861	
		p		*N*	*2*	*1*	*1*	*2*	*4*	*22*	*127*	*+30.7*	*342.4*	*+61.3*	*-58.5*	*.885*
		f		*S*	*2*		*2*		*4*	*16*	*101*	*+30.1*	*335.3*	*+54.2*	*-57.8*	*.831*
		3_2	N	1		1			3	12	+30.7	344.8	+63.6	-58.9	.901	
		3_1	N'				1		1	7	+30.1	343.0	+61.9	-59.3	.889	
			N)					1	-	2	+29.6	342.6	+61.5	-59.8	.886	
		3	N	1c	1r				17	88	+30.6	342.1	+61.0	-58.6	.883	
		7	N				1	1×	1	13	+32.4	342.1	+61.0	-56.6	.886	×6
			N					1	-	2	+29.6	341.8	+60.6	-59.7	.880	
			N					1	-	3	+29.2	341.0	+59.9	-60.0	.874	
			(S)					1	-	2	+30.8	339.6	+58.4	-57.9	.865	
		8	S'	1		1		1×	4	13	+29.7	339.0	+57.8	-59.0	.859	×3→5
			S)					1	-	1	+31.0	338.2	+57.0	-57.4	.856	
		6	S					1	-	1	+32.0	335.2	+54.0	-55.6	.834	
		4_{12}	S	1b		1q			12	84	+30.1	334.6	+53.5	-57.6	.825	
	100		△ ℍ	3	1			3	23	139	-21.2	306.8	+25.6	-138.3	.610	
		p•1		*S*	*3*	*1p*			*23+*	*134*	*-21.1*	*307.1*	*+25.9*	*-137.9*	*.611*	*+13+7+3*
		f		*N*				*3*	-	*5*	*-24.1*	*299.5*	*+18.3*	*-150.3*	*.580*	
		2_4	N)					1	-	2	-24.4	300.3	+19.2	-149.4	.590	
		2_2	N)					1	-	2	-24.1	299.1	+17.9	-150.9	.578	
		2_1	N)					1	-	1	-23.4	298.6	+17.5	-150.8	.566	
	103	*p•1*	◇	*N*	1c		1r		12	75	+20.2	300.4	+19.3	-51.8	.396	
	104		ℍ≠ℍ	6	2	3	1		69	463	+ 6.2	204.8	-76.3	+85.2	.970	
		p		*S*	*3*	*1*	*2*		*35*	*163*	*+ 7.6*	*205.8*	*-75.2*	*+83.8*	*.966*	
		f		*N*	*3*	*1*	*1*	*1*	*34*	*300*	*+ 5.5*	*204.3*	*-76.9*	*+85.9*	*.973*	
		1	S	1c	1a				16	62	+ 8.0	207.4	-73.3	+83.5	.958	
		2	N	1c		1a			12	97	+ 6.0	206.9	-74.2	+85.6	.961	
		3_1	S	1		1			9	76	+ 7.5	204.9	-76.2	+83.9	.970	
		3_2	S	1		1			10	25	+ 6.8	204.5	-76.7	+84.5	.972	
		4_{12}	N'	2b	1a				21+	190	+ 5.1	203.1	-78.1	+86.1	.978	+18+3
		6_1	N)				1		1	13	+ 6.7	202.7	-78.5	+84.5	.979	
Oct 6		*5*	*69*	*15*	*5*	*7*	*3*	*13*	*168*	*1060*	*{+6.4}*	*{281.2}*		*{+26.3}*	*152*	*937*
279.373	97→	$p•1_1$	ℍ	*N*	1c	1a*			22	177	+14.9	348.0	+78.9	-76.1	.978	
G /0857/	98		ℍ-◇	3	1	2	1	2	35	168	+30.1	337.9	+68.8	-60.0	.930	
		p		*N*	*1*		*1*	*1*	*1*	*14*	*63*	*+30.3*	*343.3*	*+74.2*	*-60.3*	*.959*
		f		*S*	*2*	*1*	*1*		*1*	*21*	*105*	*+30.0*	*334.6*	*+65.6*	*-59.9*	*.913*

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		3_2	N'				1		1	7	+30.6	344.8	+75.8	-59.9	.965	
		3	N	1c		1r			13	54	+30.2	343.1	+74.1	-60.4	.958	
		7	N'					1	-	2	+31.5	341.9	+72.8	-58.9	.953	
			S)					1	-	3	+31.2	338.1	+69.1	-59.0	.934	
		8	S	1		1			3	11	+29.4	337.9	+68.8	-60.9	.932	
		4_{12}	S	1c	1q				18	91	+30.0	334.1	+65.1	-59.8	.910	
	100		Δ ♊	3	1			2	21	122	-21.3	306.6	+37.6	-127.9	.723	
		p•1	*S*	*3*	*1q*				*21+*	*119*	*-21.2*	*306.8*	*+37.8*	*-127.7*	*.724*	*+10+9+2*
		f	*N*					*2*	-	*3*	*-23.4*	*299.9*	*+30.9*	*-135.7*	*.675*	
		2_4	N)					1	-	2	-24.3	300.4	+31.4	-136.3	.688	
			N)					1	-	1	-21.6	298.8	+29.8	-134.6	.650	
	103		Δ ♢	1		1		1	10	82	+19.9	300.1	+31.1	-62.8	.548	
		p•1	*N*	*1*		*1*			*10*	*81*	*+19.9*	*300.1*	*+31.1*	*-62.9*	*.548*	
		f•	*S)*					*1*	-	*1*	*+22.3*	*296.2*	*+27.1*	*-56.0*	*.511*	
	104		♊≠♢ δ	11	1	8	2	3	81	391	+ 6.6	205.6	-63.4	+85.8	.892	
		p	*S*	*8*		*6*	*1*	*3*	*50*	*219*	*+ 7.4*	*206.5*	*-62.5*	*+85.0*	*.885*	
		f	*N*	*3*	*1*	*2*	*1*		*31*	*172*	*+ 5.6*	*204.5*	*-64.6*	*+86.9*	*.902*	
		1_2	S	1		1			2	7	+ 8.4	208.7	-60.4	+83.9	.867	
		1_3	S'					1	-	3	+ 7.6	208.4	-60.6	+84.8	.869	
		1_1	S	2		1			13+	54	+ 8.5	207.7	-61.4	+83.9	.875	+9+4
		2	N]	1		1			8	(39]	+ 6.6	207.3	-61.7	+86.0	.879	
		3_0	S]	2		1			10+	(48]	+ 7.2	207.0	-62.1	+85.3	.882	+5+5
		3_3	S'				1		1	4	+ 7.8	206.8	-62.3	+84.5	.883	
		5_2	S					1	-	3	+ 5.6	206.7	-62.4	+87.1	.885	
			(S)					1	-	1	+11.7	206.2	-62.8	+80.1	.886	
		5_1	S	1		1			5	35	+ 6.2	205.8	-63.3	+86.3	.892	
		3_1	S'	1		1			6	24	+ 7.5	205.3	-63.7	+84.8	.894	
		3_2	S	1		1			13	40	+ 6.8	205.2	-63.8	+85.6	.896	
		4_{12}	N	1b	1a				16	98	+ 5.0	203.7	-65.3	+87.5	.908	
		6_1	N	1		1			6	26	+ 6.1	203.5	-65.6	+86.2	.909	
		6_2	N				1		1	9	+ 6.8	203.1	-65.9	+85.4	.911	
Oct 7		*5*	*67*	*19*	*4*	*11*	*3*	*8*	*169*	*940*	*{+6.4}*	*{269.0}*		*{+26.3}*	*153*	*853*
280.434 G /1025/	98→	*f•4_{12}*	*♢ S*	1		1			7	94	+30.1	334.4	+79.3	-60.5	.978	
	100		Δ ♊	2	1			2	16	115	-21.2	306.5	+51.5	-120.1	.845	
		p•1	*S*	*2b*	*1q*				*16+*	*113*	*-21.2*	*306.6*	*+51.6*	*-120.0*	*.846*	*+11+5*
		f	*N*					*2*	-	*2*	*-24.0*	*300.5*	*+45.5*	*-126.2*	*.808*	
			N)					1	-	1	-24.2	301.5	+46.5	-125.8	.818	
		(2_2)	N)					1	-	1	-23.8	299.4	+44.4	-126.5	.798	
	103		Δ ♢	1		1		1	9	60	+19.9	300.1	+45.1	-68.2	.720	
		p•1	*N*	*1*		*1*			*9*	*59*	*+19.9*	*300.2*	*+45.2*	*-68.3*	*.721*	
		f•	*S)*					*1*	-	*1*	*+21.4*	*296.8*	*+41.8*	*-65.2*	*.686*	
	104		♊≠♢ δ	8	1	7	7	5	67	410	+ 7.0	206.2	-48.8	+86.2	.751	
		p	*S*	*6*		*6*	*7*	*4*	*43*	*266*	*+ 7.7*	*206.8*	*-48.2*	*+85.3*	*.744*	
		f	*N*	*2*	*1*	*1*		*1*	*24*	*144*	*+ 5.7*	*205.2*	*-49.8*	*+87.8*	*.762*	
		1_3	S'				2		2	25	+ 8.4	209.3	-45.8	+84.5	.715	
		1_2	S'				1		1	10	+ 9.0	208.7	-46.3	+83.6	.721	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1_1	S	1		1			4	20	+ 8.4	207.9	-47.1	+84.4	.731	
		2	N	1		1			8	(48	+ 6.8	207.9	-47.1	+86.5	.731	
		3_0	S	1		1			7	(41	+ 7.5	207.3	-47.7	+85.6	.738	
		5_2	S				1		1	7	+ 5.6	207.3	-47.8	+88.2	.740	
			(S)					2	-	2	+11.7	207.0	-48.0	+80.0	.742	→6↓5
		3_3	S	1		1			8	42	+ 8.4	206.6	-48.4	+84.4	.746	
		5_1	S	1		1			3	16	+ 6.6	206.3	-48.7	+86.7	.750	
			S				1		1	5	+11.1	206.1	-48.9	+80.7	.752	
		5_3	S				1	2×	1	19	+ 5.3	205.9	-49.1	+88.5	.756	×7
		3_1	S'	1		1			2	28	+ 7.6	205.7	-49.4	+85.4	.757	→9↓6xy
		3_2	S	1		1			12	45	+ 7.0	205.6	-49.4	+86.2	.758	
			S				1		1	6	+13.1	204.7	-50.3	+78.2	.768	
		4_{12}	N	1c	1a				16	80	+ 5.0	204.0	-51.0	+88.7	.777	
		6_{12}	N					1	-	16	+ 6.0	203.5	-51.5	+87.3	.782	
	105	↑*f*•	Δ	*S*				1	-	2	+16.2	204.7	-50.3	+74.2	.770	
Oct 8		*5*	*66*	*12*	*2*	*9*	*7*	*9*	*99*	*681*	*{+6.3}*	*{255.0}*		*{+26.3}*	*121*	*789*
281.378 G /0905/	100	*p*•1	♊	*S*	1b	1a*			23	111	-21.3	306.4	+63.9	-115.8	.931	
	103	*p*•1	◇	*N*	1		1		12	51	+19.8	300.0	+57.5	-70.5	.844	
	104		♊≠◇	δ	9	1	7	5	11	65	353	+ 6.9	206.5	-36.1	+86.7	.588
		p		*S*	*6*		*6*	*5*	*9*	*41*	*223*	*+ 7.6*	*207.0*	*-35.5*	*+85.6*	*.580*
		f		*N*	*3*	*1*	*1*		*2*	*24*	*130*	*+ 5.7*	*205.6*	*-37.0*	*+88.7*	*.601*
		1_3	S				1	1×	1	4	+ 8.1	209.5	-33.1	+84.8	.545	×→7
		1_2	S				1		1	5	+ 8.9	209.3	-33.3	+83.3	.548	
		1_1	S	1		1			3	14	+ 8.5	208.5	-34.1	+84.1	.559	
		2	N	1		1			8	(40	+ 7.1	208.5	-34.1	+86.5	.560	
			(S)					1	-	4	+12.0	208.3	-34.2	+77.9	.565	
		3_0	S	1		1			13	(65	+ 7.8	208.0	-34.6	+85.3	.566	
		5_2	S'					1	-	4	+ 6.0	207.6	-35.0	+88.5	.572	
		5_1	S	1		1			2	7	+ 7.2	206.9	-35.7	+86.3	.582	
		3_3	S	1		1			8	44	+ 8.1	206.5	-36.0	+84.9	.587	
		5_3	S				3	4	3	27	+ 5.9	206.2	-36.4	+88.5	.593	→15↑10xy
			S)					1	-	1	+ 8.8	206.2	-36.4	+83.6	.592	
		3_1	S	1		1			3	12	+ 7.6	205.9	-36.7	+85.6	.596	
		3_2	S	1		1			7	33	+ 7.1	205.8	-36.8	+86.5	.597	
		4_{12}	N	2b	1a				16	87	+ 5.1	204.3	-38.2	+89.7	.619	
			S)					1	-	3	+ 9.4	203.8	-38.8	+82.8	.625	
		6_{12}	N					2	-	3	+ 6.1	203.4	-39.2	+88.1	.631	→11
		U 4_1	*N*	*1*					*10*	-	*+ 5.1*	*204.6*	*-38.0*	*+89.7*	*.615*	
		U 4_2	*N*	*1*					*6*	-	*+ 5.2*	*203.9*	*-38.7*	*+89.6*	*.625*	
	105	*p*•	Δ	(*N*)				1	-	1	+16.7	205.6	-37.0	+70.7	.613	
	106	→*p*	♊	*N*	3	1			1	28	224	+18.8	160.9	-81.6	+72.0	.986
		1_{12}	N	3d	1u					(28)	(222)	+18.8	160.9	-81.6	+71.0	.986
			N)					1	-	(2)	+21.4	158.0	-84.6	+69.1	.992	
Oct 9		*5*	*66*	*14*	*3*	*8*	*5*	*13*	*128*	*740*	*{+6.2}*	*{242.6}*		*{+26.3}*	*144*	*783*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	ETXRA DATA
282.314 G /0733/	100→	p•1	¤ S	1c	1a*				26	116	-21.2	306.5	+76.3	-112.9	.984	
	103→	p•1	◇ N	1		1			6	32	+19.7	299.8	+69.6	-71.2	.933	
	104		◇≠◇ δ	5		4	4	13	43	196	+ 7.1	207.1	-23.1	+86.1	.392	
		p	S	2		2	4	11	24	108	+ 8.1	208.2	-22.1	+83.7	.377	
		f	N	3		2		2	19	88	+ 6.0	205.9	-24.3	+89.0	.412	
		1_3	S'					2	-	4	+ 7.7	210.3	-20.0	+84.5	.342	→6
		1_{12}	S				1		1	8	+ 8.3	209.6	-20.6	+82.8	.352	
			(N)					1	-	1	+ 4.3	209.4	-20.9	+94.1	.357	
		2	N]	1		1			8	(26]	+ 7.3	208.8	-21.4	+85.6	.364	
		3_0	S]	1		1			15+	(59]	+ 8.0	208.6	-21.7	+83.8	.369	+14+
			S					1	-	1	+ 9.2	208.3	-21.9	+80.7	.375	
			S					2	-	3	+12.5	207.8	-22.4	+72.4	.392	
		5_2	S'					1	-	1	+ 6.3	207.7	-22.5	+88.4	.382	
		5_1	S	1		1			5	7	+ 7.4	207.4	-22.8	+85.6	.388	
		5_3	S'					3	-	4	+ 6.4	207.1	-23.2	+88.3	.393	
			S)					1	-	2	+13.4	206.9	-23.3	+70.7	.410	
		3_3	S				2	1^x	2	14	+ 7.8	206.6	-23.6	+84.7	.401	$^x{}_2$↑6yyx
		3_2	S				1		1	5	+ 7.2	205.9	-24.4	+86.2	.412	
		4_{12}	N	2		1a			11	60	+ 5.4	204.6	-25.6	+90.4	.433	
		6_{12}	N					1	-	1	+ 6.8	204.0	-26.3	+87.3	.442	
		U 4_1	N	1					8	-	+ 5.5	204.8	-25.5	+90.3	.430	
		U 4_2	N	1					3	-	+ 5.2	204.1	-26.1	+90.7	.440	
	105		Δ Δ					2	-	2	+15.6	206.9	-23.5	+65.9	.422	
		p•	N)					1	-	1	+15.6	207.5	-22.8	+65.3	.412	
		f•	S					1	-	1	+15.5	206.2	-24.1	+66.4	.431	
	106	p	◙ N	2	1			1	49	329	+18.9	160.4	-69.8	+72.1	.934	
		1_{12}	N	2b	1q				49	324	+18.9	160.4	-69.8	+72.1	.934	
			N					1	-	5	+21.5	157.7	-72.5	+69.4	.950	
		U 1_1	N	1					25	-	+18.6	160.7	-69.5	+72.4	.933	
		U 1_2	N	1					24	-	+19.2	160.1	-70.1	+71.8	.936	
Oct 10		5	63	9	2	5	4	16	124	675	{+6.2}	{230.2}		{+26.3}	128	663
283.183 K /0423/	104		◇≠◇ δ	3		3	1	3	26	154	+ 7.1	208.0	-10.8	+82.9	.188	
		p	S	1		1		3	12	72	+ 8.2	209.3	- 9.5	+77.0	.168	
		f	N	2		2	1		14	82	+ 6.2	206.9	-11.9	+88.1	.205	
		1_{12}	S					1	-	2	+ 8.1	210.3	- 8.4	+76.2	.150	
		3_0	S]	1		1			12	(68]	+ 8.2	209.3	- 9.5	+76.8	.168	
		2	N]	1		1			7	(39]	+ 7.2	209.2	- 9.6	+82.9	.167	
		(5_2)	S'					1	-	1	+ 6.7	207.4	-11.4	+86.7	.197	
		(3_3)	S					1	-	1	+ 7.6	207.0	-11.8	+82.0	.206	
		4_1	N	1		1a			6	35	+ 5.3	205.0	-13.8	+92.6	.238	
		4_2	N				1		1	8	+ 4.9	204.3	-14.5	+94.0	.250	
	/105/															INTERMITTENT
	106	p•1_{12}	◙ N	2b	1q				54	259	+18.7	160.2	-58.6	+71.8	.853	
		U 1_1	N	1					25	-	+18.3	160.6	-58.2	+72.2	.849	
		U 1_2	N	1					29	-	+18.9	159.9	-58.9	+71.5	.856	
Oct 11		2	31	5	1	3	1	3	80	413	{+6.1}	{218.8}		{+26.3}	107	573

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
284.186	104		◊‡◊ δ	4		3	1	7	18	104	+ 7.0	208.2	+ 2.6	+1.5	.059	
K /0428/	*p*		*S*	*2*		*1*		*5*	*9*	*51*	*+ 7.9*	*209.4*	*+ 3.8*	*-59.4*	*.079*	
	f		*N*	*2*		*2*	*1*	*2*	*9*	*53*	*+ 6.0*	*207.0*	*+ 1.4*	*(+60.1)*	*.040*	
		3_o	S]	2		1			9	(41]	+ 7.9	210.2	+ 4.6	-67.3	.087	
		2	N]	1		1			5	(22]	+ 7.2	209.6	+ 4.0	-74.2	.073	
			S)					1	-	1	+12.1	208.1	+ 3.0	-26.1	.118	
			S					1	-	2	+ 5.4	207.7	+ 2.1	-107.1	.039	
		7	S					1	-	1	+ 6.8	206.7	+ 1.2	-58.2	.024	
			S)					1	-	3	+ 7.9	205.4	- 0.1	+3.9	.032	
			S					1	-	3	+ 9.1	205.3	- 0.3	+5.0	.053	
		4_1	N	1		1a			3	23	+ 5.2	205.3	- 0.2	+164.3	.015	
		8_2	N					1	-	1	+ 6.1	205.1	- 0.5	+84.1	.008	
		4_2	N				1		1	5	+ 4.9	204.7	- 0.8	+145.1	.025	
		8_1	N					1	-	2	+ 5.4	204.2	- 1.4	+114.8	.027	
	105 +		△ △					4	-	4	+15.8	205.8	+ 0.3	-1.3	.173	
	p•		*N)*					*1*	-	*1*	*+16.0*	*208.7*	*+ 3.2*	*-17.0*	*.181*	
	f		*S*					*3*	-	*3*	*+15.8*	*204.8*	*- 0.7*	*+3.9*	*.170*	
			S)					1	-	1	+15.9	205.9	+ 0.4	-2.3	.171	
			S)					1	-	1	+14.7	204.5	- 1.1	+6.7	.152	
			S)					1	-	1	+16.7	204.1	- 1.4	+7.4	.186	
	106	*p•*1_{12}	✖ *N*	2b	lr				39	268	+18.7	160.2	-45.3	+69.8	.720	
	U	1_1	*N*	*1*					*17*	-	*+18.4*	*160.7*	*-44.8*	*+70.1*	*.714*	
	U	1_2	*N*	*1*					*21*	-	*+19.0*	*159.9*	*-45.7*	*+69.5*	*.725*	
Oct 12		*3*	*42*	*6*	*1*	*3*	*1*	*11*	*57*	*376*	*{+6.1}*	*{205.5}*		*{+26.3}*	*90*	*587*
285.397	104		◊‡◊ δ	6		5	2	11	38	210	+ 6.1	206.6	+17.0	-88.9	.293	
G /0927/	*p*		*S*	*1*		*1*	*1*	*4*	*11*	*71*	*+ 6.8*	*208.1*	*+18.5*	*-86.3*	*.317*	
	f		*N*	*5*		*4*	*1*	*7*	*27*	*139*	*+ 5.7*	*205.9*	*+16.3*	*-90.3*	*.280*	
			(N)					1	-	1	+ 6.1	211.1	+21.5	-88.4	.366	
		3_o	S]				1		3	(21]	+ 7.5	210.5	+20.9	-84.7	.357	
		2	N]	1		1			3	(21]	+ 7.0	209.9	+20.3	-86.1	.347	
			N)					1	-	2	+ 4.3	208.9	+19.3	-93.9	.332	
			N)					3	-	6	+ 3.0	208.9	+19.3	-98.0	.334	
			N)					1	-	2	+ 3.8	208.4	+18.8	-95.9	.325	
			S)					2	-	3	+ 5.2	207.8	+18.2	-91.7	.313	
			S)					2	-	4	+ 5.9	207.7	+18.1	-89.2	.311	
		7	S	1b		1			8	43	+ 6.7	207.0	+17.4	-86.4	.299	
			N				1	$1^{\times}$	1	4	+ 7.0	205.9	+16.3	-85.6	.280	$^{\times}{}_2\uparrow 6$
		4_1	N	1		1a			4	25	+ 5.2	205.2	+15.6	-92.2	.269]	$^{\times}\rightarrow 7$
		8_2	N	$2^{\times}$		1			11^{+}	51]	+ 6.0	204.6	+15.0	-89.1	.258]	$^{+}8+2+$
		8_1	N	1		1			8	27]	+ 5.1	204.5	+14.9	-92.5	.257	
	106	*p•*1_{12}	✖ *N*	2b	lr				50	297	+18.5	160.1	-29.5	+63.8	.523	
	U	1_1	*N*	*1b*					*31*	-	*+18.2*	*160.3*	*-29.3*	*+64.1*	*.518*	
	U	1_2	*N*	*1b*					*19*	-	*+19.0*	*159.6*	*-30.6*	*+63.2*	*.531*	
	107 ↑	*p•*1_1	◊ *N*	1		1			2	4	+18.6	172.8	-16.8	+50.9	.354	
	108 ├→		◊ ¤	2	1	1			28	243	+22.2	110.7	-78.9	+68.5	.977	
	*p•*1		*N*	*1c*	*1a**				*25*	*175*	*+22.0*	*112.2*	*-77.4*	*+68.8*	*.972*	
	f•2_1		*S'*	*1*	*(1)*				*(3)*	*(68)*	*+22.7*	*106.7*	*-82.9*	*+67.9*	*.989*	
Oct 13		*4*	*60*	*11*	*2*	*7*	*2*	*11*	*118*	*754*	*{+6.0}*	*{189.6}*		*{+26.3}*	*174*	*1017*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
286.442	104		◇≠◇	5		5	1	9	18	68	+ 5.8	207.5	+31.7	-88.5	.525	
G /1036/		*p*	*S*	*1*		*1*		*3*	*4*	*27*	*+ 6.5*	*208.2*	*+32.5*	*-87.1*	*.535*	
		f	*N*	*4*		*4*	*1*	*6*	*14*	*41*	*+ 5.4*	*207.0*	*+31.2*	*-89.4*	*.518*	
		3_o	S					2	-	3	+ 7.0	211.1	+35.3	-86.2	.577	→5↓4
		2	N	1		1			5	11	+ 6.5	210.3	+34.6	-87.2	.567	
			N)				1	1	1	8	+ 3.7	209.1	+33.3	-92.3	.551	
			S)					1	-	1	+ 7.7	208.3	+32.5	-85.0	.537	
		7	S	1		1			4	23	+ 6.4	207.8	+32.1	-87.3	.530	
		4_1	N	1		1			3	6	+ 5.1	205.2	+29.5	-90.0	.492	
		8_2	N	1		1		3^x	2	8	+ 6.1	204.4	+28.6	-88.1	.479	$^x{}_5$←5↓5
		8_1	N	1		1		2^x	3	8	+ 5.1	204.2	+28.5	-90.2	.477	$^x{}_3$↑
	106	*p•1₁₂*	*N*	*3b 1q*					40	245	+18.8	159.9	-15.9	+48.8	.346	
		U 1_1	*N*	*1b*					*26*	-	*+18.6*	*160.1*	*-15.6*	*+48.9*	*.341*	
		U 1_{21}	*N*	*1c*					*7*	-	*+19.0*	*159.5*	*-16.3*	*+49.0*	*.354*	
		U 1_{22}	*N*	*1b*					*7*	-	*+19.5*	*159.4*	*-16.4*	*+48.1*	*.359*	
	107		◇ ◇	2		2	1	3	5	14	+18.3	172.3	- 3.5	+15.1	.224	
		p	*N*	*1*		*1*	*1*	*1*	*3*	*7*	*+18.7*	*173.1*	*- 2.7*	*+11.4*	*.228*	
		f	*S*	*1*		*1*		*2*	*2*	*7*	*+17.9*	*171.5*	*- 4.3*	*+18.8*	*.220*	
		1_1	N	1		1	1^x		3	6	+18.7	173.2	- 2.6	+11.0	.227	$^x{}_3$→
		1_2	N					1	-	1	+19.0	172.4	- 3.3	+13.6	.234	
		2_1	S	1		1		1^x	2	6	+17.8	171.5	- 4.3	+18.8	.219	$^x{}_2$←
		2_2	S					1	-	1	+18.2	171.4	- 4.3	+18.6	.227	
	108		◇ ¤	3	1	1	1	1	34	263	+22.4	109.7	-66.0	+68.0	.912	
		p	*N*	*1*	*1*			*1*	*20*	*154*	*+21.9*	*111.9*	*-63.9*	*+68.4*	*.898*	
		f	*S*	*2*		*1*	*1*		*14*	*109*	*+23.0*	*106.7*	*-69.0*	*+67.6*	*.932*	
		1	N	1b 1q					20	151	+21.9	111.9	-63.9	+68.4	.898	
			N)					1	-	3	+22.9	110.8	-65.0	+67.5	.906	
		2_2	S				1		1	11	+23.4	108.3	-67.5	+67.1	.922	
		2_1	S	2b		1			13^+	98	+23.0	106.5	-69.2	+67.6	.933	+11+2
	109 ↑	*p•1*	*▽ N*				1		1	3	+23.0	162.5	-13.2	+35.4	.366	
Oct 14		*5*	*66*	*13*	*2*	*8*	*4*	*13*	*98*	*593*	*{+5.9}*	*{175.8}*		*{+26.3}*	*145*	*823*
287.493	104		◇≠△	2		2		6	11	23	+ 5.8	208.8	+46.9	-87.6	.728	
G /1150/		*p↓7*	*S*					*2*	-	*3*	*+ 6.3*	*208.4*	*+46.5*	*-86.8*	*.724*	
		f	*N*	*2*		*2*		*4*	*11*	*20*	*+ 5.7*	*208.9*	*+47.0*	*-87.7*	*.729*	
			(N)					1	-	1	+ 4.1	211.7	+49.8	-89.6	.764	
		2	N	1		1			8	11	+ 6.3	210.9	+49.0	-86.8	.753	
			N)					1	-	2	+ 5.0	210.2	+48.3	-88.5	.746	
		8_1	N	1		1			3	4	+ 4.9	204.5	+42.5	-89.1	.676	
		8_2	N					2	-	2	+ 5.4	204.0	+42.1	-88.3	.670	
	106	*p*	*N*	*3 1*				1	38	222	+18.8	159.5	- 2.4	+9.9	.229	
		1_{12}	N	3b 1p					38	221	+18.8	159.5	- 2.4	+9.9	.229	
			N)					1	-	1	+20.5	158.0	- 3.9	+14.1	.262	
		U 1_1	*N*	*1b*					*20*	-	*+18.6*	*160.0*	*- 2.0*	*+8.3*	*.224*	
		U 1_{21}	*N*	*1b*					*11*	-	*+18.8*	*159.1*	*- 2.8*	*+11.7*	*.231*	
		U 1_{22}	*N*	*1b*					*6*	-	*+19.4*	*159.0*	*- 2.9*	*+11.5*	*.242*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	107		◇-◇	4		4	1	1	17	56	+18.4	173.3	+11.4	-40.2	.290	
		p	*N*	*2*		*2*	*1*	*1*	*10*	*40*	*+18.6*	*173.9*	*+12.0*	*-41.3*	*.300*	
		f	*S*	*2*		*2*			*7*	*16*	*+17.9*	*171.6*	*+ 9.7*	*-37.4*	*.266*	
		1_1	N	1		1	1×		3	11	+18.8	174.3	+12.4	-41.8	.306	×5←
		1_3	N					1	-	1	+17.7	174.1	+12.2	-44.0	.292	
		1_2	N	1		1n			7	28	+18.6	173.8	+11.9	-41.0	.298	
		2_3	S	1		1			2	4	+17.4	173.2	+11.3	-42.8	.277	
		2_{12}	S	1		1			5+	12	+18.0	171.1	+ 9.2	-35.6	.262	+3+
	108		◇ ⌅	4	1	1	1	4	31	161	+21.9	110.4	-51.5	+66.7	.792	
		p•1	*N*	*3t*	*1q*				*26*	*136*	*+21.8*	*111.1*	*-50.8*	*+66.7*	*.785*	
		f	*S*	*1*		*1*	*1*	*4*	*5*	*25*	*+22.6*	*106.7*	*-55.2*	*+66.5*	*.828*	
		2_2	S				1	2	1	9	+23.0	107.6	-54.3	+65.9	.821	
		2_3	S					1	-	5	+21.6	106.4	-55.5	+67.8	.830	
		2_1	S	1b		1		1×	4	11	+22.7	106.2	-55.7	+66.5	.833	×2
		U 1_3	*N*	*1*					*5*	-	*+21.4*	*111.8*	*-50.1*	*+67.1*	*.778*	
		U 1_2	*N*	*1b*					*16*	-	*+21.8*	*111.1*	*-50.8*	*+66.8*	*.785*	
		U 1_1	*N*	*1*					*5*	-	*+22.3*	*110.5*	*-51.4*	*+66.2*	*.792*	
	109	*p•1*	△ *N*				1		1	3	+23.0	162.3	+ 0.4	-1.1	.296	
Oct 15		*5*	*65*	*13*	*2*	*7*	*3*	*12*	*98*	*465*	*{+5.8}*	*{161.9}*		*{+26.2}*	*161*	*773*
288.510	104	*f*	△ *N*				2		2	6	+ 5.9	208.9	+60.4	-86.5	.868	*
G /1215/		2	N				1		1	4	+ 6.2	211.1	+62.6	-86.0	.887	
		8_1	N'				1		1	2	+ 5.2	204.6	+56.1	-87.6	.830	
	106	*p*	◙ *N*	3	1	1		4	35	183	+18.8	159.5	+11.0	-38.4	.294	
		1_{121}	N	2b	1p				31	163	+18.7	159.7	+11.2	-39.0	.294	
			N)					2	-	2	+17.9	158.7	+10.2	-38.4	.273	
		1_{22}	N	1c		1			4	16	+19.8	158.5	+10.0	-33.9	.295	
			N)					2	-	2	+19.8	156.2	+ 7.7	-27.4	.275	↑5
		U 1_1	*N*	*1b*					*25*	-	*+18.7*	*159.9*	*+11.4*	*-39.5*	*.295*	
		U 1_{21}	*N*	*1c*					*5*	-	*+19.0*	*159.0*	*+10.5*	*-36.7*	*.289*	
	107		◇-◇	6		6	1	4	30	99	+18.7	174.1	+25.6	-60.3	.473	
		p	*N*	*3*		*3*		*1*	*15*	*63*	*+19.2*	*175.2*	*+26.7*	*-60.3*	*.492*	
		f	*S*	*3*		*3*	*1*	*3*	*15*	*36*	*+17.8*	*172.0*	*+23.5*	*-60.4*	*.439*	
		1_1	N	1		1a		1×	7	37	+19.2	175.6	+27.1	-60.6	.497	×3↓
		1_3	N	1		1			2	9	+18.7	175.0	+26.5	-61.0	.485	
		1_2	N	1		1u			6	17	+19.4	174.5	+26.0	-59.3	.484	
		2_3	S	1		1			3	7	+17.4	173.2	+24.7	-62.2	.453	
		2_4	S'				1		1	9	+18.1	173.0	+24.5	-60.5	.455	
			S)					2	-	3	+17.8	172.2	+23.7	-60.4	.442	
		2_2	S	1		1			3	5	+18.2	171.1	+22.6	-58.6	.430	
		2_1	S	1		1		1	8	12	+17.5	171.0	+22.5	-60.0	.423	
	108		◇ ⌅	5	1	1		3	29	133	+21.9	110.2	-38.3	+62.6	.650	
		p•1	*N*	*4t*	*1a*				*26*	*120*	*+21.8*	*110.7*	*-37.8*	*+62.5*	*.644*	
		f	*S*	*1*		*1*		*3*	*3*	*13*	*+22.5*	*105.7*	*-42.8*	*+63.6*	*.705*	
			S)					1	-	1	+21.6	106.8	-41.7	+64.7	.689	
		2_2	S'					1	-	1	+23.0	106.7	-41.8	+62.5	.694	
		2_3	S'					1	-	1	+21.3	106.1	-42.4	+65.0	.696	
		2_1	S	1		1			3	10	+22.7	105.4	-43.1	+63.4	.708	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		U 1_3	*N*	*1c*					*9*	-	*+21.4*	*111.2*	*-37.3*	*+62.9*	*.636*	
		U 1_2	*N*	*1b*					*7*	-	*+21.7*	*110.6*	*-37.9*	*+62.7*	*.645*	
		U 1_1	*N*	*2b*					*10*	-	*+22.3*	*110.4*	*-38.1*	*+62.0*	*.650*	
	109	*f•*	Δ (*S*)					1	-	1	+22.0	161.1	+12.6	-35.5	.349	
	110 ↑		◇-◇	2		2	2	2	10	24	+23.7	145.6	- 2.9	+8.4	.314	
		p 1_1	*N*	*1*		*1*	*1*	×	*3*	*9*	*+23.8*	*147.7*	*- 0.8*	*+2.3*	*.311*	×4→
		f	*S*	*1*		*1*	*1*	*2*	*7*	*15*	*+23.6*	*144.4*	*- 4.1*	*+12.1*	*.316*	
		2_4	S'					1	-	1	+24.0	145.9	- 2.6	+7.4	.318	train
		2_3	S'					1	-	1	+23.5	145.3	- 3.2	+9.5	.312	
		2_2	S'				1		1	2	+23.6	144.8	- 3.7	+11.0	.314	
		2_1	S	1		1			6	11	+23.6	144.1	- 4.4	+13.0	.316	
Oct 16		*6*	*76*	*16*	*2*	*10*	*5*	*14*	*106*	*446*	*{+5.7}*	*{148.5}*		*{+26.2}*	*185*	*780*
289.360 G /0838/	104 →	*f•2*	Δ *N*					1	-	2	+ 6.1	211.5	+74.2	-85.3	.961	*
	106	*p*	✖ *N*	4	1	1			38	164	+19.0	159.5	+22.2	-56.4	.431	
		1_{121}	N	3b	1p				35	157	+18.9	159.6	+22.3	-56.6	.431	
		1_{22}	N	1		1			3	7	+20.1	158.4	+21.1	-53.0	.426	
		U 1_1	*N*	*1*					*26*	-	*+18.9*	*159.8*	*+22.5*	*-56.9*	*.434*	
		U 1_{21}	*N*	*2b*					*9+*	-	*+18.9*	*158.9*	*+21.6*	*-55.9*	*.423*	+5+4
	107		◇ ◇	4		4	3	6	14	54	+18.7	174.2	+36.9	-66.7	.621	
		p	*N*	*2*		*2*	*1*	*1*	*7*	*31*	*+19.5*	*175.7*	*+38.5*	*-66.2*	*.643*	
		f	*S*	*2*		*2*	*2*	*5*	*7*	*23*	*+17.7*	*172.1*	*+34.9*	*-67.5*	*.591*	
		1_1	N	1		1			4	12	+19.5	176.4	+39.1	-66.4	.651	train
		1_3	N	1		1			2	10	+19.4	175.7	+38.4	-66.3	.642	
		1_2	N				1	×	1	9	+19.6	174.9	+37.7	-65.7	.634	×3
		2_3	S	1		1			3	5	+17.5	173.1	+35.8	-68.2	.603	
		2_4	S					3	-	4	+18.0	173.1	+35.8	-67.5	.604	
			S)					2	-	3	+17.8	172.1	+34.8	-67.4	.591	
		2_2	S	1		1			2	4	+18.3	171.4	+34.2	-66.2	.584	
		2_1	S				2		2	7	+17.4	171.3	+34.1	-67.8	.580	
	108		Δ-Ж	3	1			8	23	109	+22.5	109.9	-27.4	+54.9	.522	
		p	*N*	*3*	*1*			*2*	*23*	*102*	*+22.4*	*110.1*	*-27.2*	*+54.7*	*.519*	
		f	*S*					*6*	-	*7*	*+22.7*	*106.1*	*-31.2*	*+57.4*	*.570*	
		1	N	3t	1a				23	98	+22.4	110.2	-27.1	+54.7	.518	
			N)					1	-	1	+22.5	108.9	-28.4	+55.6	.535	
			N					1	-	3	+23.7	108.5	-28.8	+54.0	.548	
			S)					4	-	4	+22.5	106.7	-30.6	+57.3	.561	
		2_4	S					1	-	1	+23.9	105.9	-31.4	+55.6	.579	
		2_1	S'					1	-	2	+22.5	104.9	-32.4	+58.4	.583	
		U 1_3	*N*	*1c*					*8*	-	*+21.8*	*110.5*	*-26.8*	*+55.4*	*.510*	
		U 1_2	*N*	*1c*					*5*	-	*+22.3*	*110.1*	*-27.2*	*+55.0*	*.519*	
		U 1_1	*N*	*1b*					*10*	-	*+22.9*	*110.1*	*-27.2*	*+54.1*	*.523*	
	109		▽ Δ				1	4	1	6	+23.5	160.7	+23.5	-49.2	.483	
		p•(3)	*N'*					*1*	-	*1*	*+22.8*	*163.5*	*+26.2*	*-53.3*	*.510*	
		f	*S*				*1*	*3*	*1*	*5*	*+23.6*	*160.1*	*+22.9*	*-48.4*	*.478*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	110	◇–◇		5		4	3	2	23	70	+23.4	147.0	+ 9.7	-26.6	.346	
		p	*N*	*2*		*2*		*2*	*12*	*49*	*+23.3*	*148.1*	*+10.8*	*-29.5*	*.352*	
		f	*S*	*3*		*2*	*3*		*11*	*21*	*+23.7*	*144.3*	*+ 7.0*	*-19.8*	*.331*	
		1_1	N	1		1			9	34	+23.4	148.6	+11.3	-30.4	.357	
		3_1	N					2	-	4	+23.5	147.2	+10.0	-27.3	.347	
		1_2	N	1		1			3	11	+22.9	146.9	+ 9.7	-27.4	.337	
		2_4	S				1		1	3	+23.9	145.5	+ 8.2	-22.6	.342	train
		2_3	S'				1		1	2	+23.8	144.7	+ 7.4	-20.8	.335	
		2_2	S'				1		1	2	+23.9	144.4	+ 7.1	-19.8	.335	
		2_1	S	2		1			6	10	+23.9	144.0	+ 6.7	-18.9	.332	
		4_1	S	1		1			2	4	+23.0	143.9	+ 6.7	-19.7	.318	
Oct 17		*6*	*74*	*16*	*2*	*9*	*7*	*21*	*99*	*405*	*{+5.7}*	*{137.3}*		*{+26.2}*	*175*	*709*
290.315 G /0734/	106	*p*	*N*	3	1			2	25	136	+19.0	159.5	+34.8	-65.1	.597	
		1_{121}	N	3b	1p				25	133	+19.0	159.5	+34.8	-65.2	.597	
			N)					1	-	1	+21.4	158.7	+34.0	-61.1	.597	
		1_{122}	N					1	-	2	+20.7	158.3	+33.6	-62.0	.588	
		U 1_1	*N*	*1c*					*20*	-	*+19.0*	*159.7*	*+35.8*	*-65.3*	*.599*	
		U 1_{21}	*N*	*2*					*5+*	-	*+19.1*	*158.7*	*+34.1*	*-64.8*	*.587*	*+3+2*
	107	◇ ◇		2		2	3	2	8	36	+18.8	174.6	+50.0	-70.2	.772	
		p	*N*	*1*		*1*	*2*	*1*	*5*	*22*	*+19.7*	*176.0*	*+51.3*	*-69.3*	*.788*	
		f	*S*	*1*		*1*	*1*	*1*	*3*	*14*	*+17.4*	*172.6*	*+47.9*	*-71.7*	*.748*	
		1_1	N				1		1	5	+19.5	176.9	+52.2	-69.7	.797	train
		1_3	N				1		1	10	+19.7	176.2	+51.5	-69.3	.790	
		1_2	N	1		1			3	6	+19.9	175.0	+50.3	-68.9	.778	
			N)					1	-	1	+19.0	174.9	+50.2	-69.9	.775	
		2_4	S'					1	-	1	+18.1	173.0	+48.3	-70.7	.754	
		2_3	S	1		1			2	9	+17.3	172.8	+48.2	-71.8	.751	
		2_1	S				1		1	4	+17.3	171.9	+47.2	-71.6	.740	
	108	△ ◇		3		3		1	17	69	+23.0	109.8	-14.8	+38.1	.384	
		p	*N*	*3*		*3*			*17*	*68*	*+23.0*	*109.9*	*-14.8*	*+37.9*	*.384*	
		f•(2_3)	*S*					*1*	-	*1*	*+22.3*	*105.9*	*-18.8*	*+45.6*	*.419*	
		1_1	N	1		1a			7	33	+23.4	110.0	-14.7	+37.1	.388	train
		1_2	N	1		1			4	8	+23.0	109.8	-14.9	+38.2	.385	
		1_3	N	1		1a			6	27	+22.5	109.8	-14.8	+38.9	.378	
	/109/															INTERMITTENT
	110	◇–¤		7	1	3		6	28	155	+22.7	147.9	+23.2	-50.4	.475	
		p	*N*	*4*	*1*	*1*			*22*	*132*	*+22.6*	*148.5*	*+23.8*	*-51.3*	*.481*	
		f	*S*	*3*		*2*		*6*	*6*	*23*	*+23.3*	*144.5*	*+19.9*	*-45.1*	*.441*	
		1_{12}	N	2b	1q				18	92	+22.5	148.8	+24.1	-51.6	.483	
		3_{12}	N	2×		1			4+	40	+22.7	147.9	+23.2	-50.5	.475	×+9 +2+2
		4_4	S					1	-	1	+22.8	146.5	+21.8	-48.5	.458	train
		2_4	S	1		1			2	4	+23.8	145.7	+21.1	-45.9	.459	
		4_3	S					1	-	1	+22.2	145.7	+21.0	-48.6	.444	
		4_2	S'					1	-	1	+22.1	144.8	+20.1	-47.6	.432	
		2_{1-3}	S	2		1			4	12	+23.7	144.2	+19.5	-44.0	.441	
		4_1	S					3	-	4	+22.5	143.6	+18.9	-45.3	.422	→7
		U 1_1	*N*	*1c*					*7*	-	*+22.9*	*148.8*	*+24.1*	*-50.9*	*.487*	
		U 1_2	*N*	*1b*					*11*	-	*+22.3*	*148.7*	*+24.1*	*-52.0*	*.481*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	111	↑ *p*•	Δ *N*					1	-	1	+22.0	129.0	+ 4.4	-14.0	.292	
	112	↑	Δ Δ					3	-	6	-24.5	84.6	-40.2	+129.4	.761	
		p•1	*S*					*1*	-	*3*	*-24.4*	*85.5*	*-39.2*	*+129.9*	*.752*	
		f	*N*					*2*	-	*3*	*-24.6*	*83.6*	*-41.1*	*+128.8*	*.769*	
		2_1	N					1	-	2	-25.4	83.7	-41.0	+129.8	.773	
		4_1	N					1	-	1	-23.0	83.4	-41.3	+126.9	.762	
Oct 18	*6*	*73*		*15*	*2*	*8*	*3*	*15*	*78*	*403*	*{+5.6}*	*{124.7}*		*{+26.1}*	*131*	*674*
291.432	106	*p*	⌑ *N*	1	1			2	18	100	+19.1	159.6	+49.7	-69.7	.771	
G /1022/		1_{121}	N		1b	1p		1×	18+	99	+19.1	159.6	+49.7	-69.7	.771	+17+ ×+
			(N)					1	-	1	+19.3	156.6	+46.6	-68.7	.738	
	107	↓ *p*	Δ *N*					2	-	7	+19.6	177.3	+67.3	-71.0	.921	
		1_1	N					1	-	4	+19.3	177.6	+67.6	-71.3	.923	
		1_3	N					1	-	3	+20.0	176.8	+66.8	-70.6	.918	
	108	*p*	◇ *N*	2		2		1	5	17	+23.7	109.8	- 0.2	+0.7	.313	
		1_1	N	1		1			3	9	+23.9	110.0	0.0	0.0	.317	train
		1_2	N					1	-	2	+23.6	109.7	- 0.2	+0.7	.312	
		1_3	N	1		1			2	6	+23.3	109.4	- 0.6	+1.8	.306	
	/109/															INTERMITTENT
	110		▽-⌑	3	1	1	5	3	43	168	+22.3	149.4	+39.5	-62.2	.667	
		p	*N*	*3*	*1*	*1*	*2*	*1*	*40*	*158*	*+22.3*	*149.7*	*+39.8*	*-62.4*	*.670*	
		f	*S*				*3*	*2*	*3*	*10*	*+22.7*	*145.2*	*+35.2*	*-59.5*	*.619*	
		1_{12}	N	1b	1p			1×	26	101	+22.3	150.1	+40.2	-62.6	.675	×+
		3_{12}	N	2b		1			12+	50	+22.2	149.1	+39.2	-62.3	.663	+6+5+
		4_5	S'					1	-	1	+21.6	148.0	+38.0	-62.6	.647	train
			N				2		2	7	+23.1	147.9	+38.0	-60.4	.653	
		4_4	S'					1	-	1	+22.0	146.4	+36.5	-61.3	.630	
		2_4	S				1		1	2	+23.9	145.6	+35.7	-58.0	.630	
		4_3	S				1		1	2	+22.7	144.9	+34.9	-59.5	.615	
		4_2	S				1		1	4	+22.6	144.1	+34.1	-59.1	.605	
	111	↓ *p*•	Δ *N)*					1	-	1	+21.8	128.0	+18.0	-45.3	.406	
	112		⌑-⌑	3	2	1	1	6	50	241	-24.5	85.0	-25.0	+142.1	.626	
		p	*S*	*1*	*1*			*1*	*29*	*144*	*-24.1*	*86.9*	*-23.0*	*+143.8*	*.606*	
		f	*N*	*2*	*1*	*1*	*1*	*5*	*21*	*97*	*-25.1*	*82.1*	*-27.9*	*+139.7*	*.656*	
		1	S	1b	1a				29	142	-24.1	86.9	-23.0	+143.8	.606	
		3_1	S					1	-	2	-23.9	85.2	-24.8	+141.6	.619	
		2_6	N'					2	-	2	-25.0	84.9	-25.1	+142.5	.633	
		4_1	N				1	1	1	6	-22.9	83.5	-26.5	+138.6	.624	
		4_2	N	1		1			3+	6	-23.7	83.0	-27.0	+139.0	.635	+2+
		4_3	N					1	-	1	-24.4	83.0	-27.0	+139.8	.642	
		2_{1-3}	N	1b	1a			1×	17	82	-25.4	81.9	-28.1	+139.8	.661	×+
Oct 19	*6*	*76*		*9*	*4*	*4*	*6*	*15*	*116*	*534*	*{+5.5}*	*{110.0}*		*{+26.0}*	*174*	*793*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
292.521 G /1231/	106	p•1_1	◊ N	1c		1q			14	87	+19.2	159.7	+64.1	-71.3	.899	
	108		Δ ◊	1		1	1	3	3	11	+24.4	109.0	+13.4	-32.7	.391	
		p	*N*	*1*		*1*	*1*		*3*	*8*	*+24.4*	*109.9*	*+14.3*	*-34.6*	*.399*	
		f	*S*					*3*	-	*3*	*+24.3*	*106.4*	*+10.8*	*-27.8*	*.369*	
		1_1	N	1		1			2	6	+24.5	110.1	+14.5	-34.7	.402	
		1_3	N				1		1	2	+24.0	109.4	+13.8	-34.1	.390	
			S)					1	-	1	+24.2	107.0	+11.4	-29.2	.372	
			S)					1	-	1	+24.9	106.6	+11.0	-27.3	.378	
		(2_4)	S'					1	-	1	+23.9	105.7	+10.1	-26.8	.358	
	109	*p*	◊ *N*	2		2		2	7	36	+22.6	166.4	+70.8	-67.8	.942	
			N	1		1			(5)	14	+22.5	168.9	+73.3	-68.0	.955	
			N)					1	-	3	+21.6	167.7	+72.1	-69.0	.949	
			N)					1	-	5	+21.2	165.7	+70.1	-69.3	.938	
		3	N	1		1			(2)	14	+23.5	163.9	+68.3	-66.8	.929	
	110		◊-Ж	4	1	3	3	6	32	160	+22.1	149.7	+54.1	-66.7	.819	
		p	*N*	*2*	*1*	*1*	*1*	*2*	*26*	*134*	*+22.1*	*150.5*	*+54.9*	*-66.9*	*.827*	
		f	*S*	*2*		*2*	*2*	*4*	*6*	*26*	*+22.1*	*145.2*	*+49.7*	*-65.7*	*.777*	
		1_{12}	N	1c	1a				23	120	+22.1	150.7	+55.1	-66.9	.828	
			N					1	-	3	+20.8	150.1	+54.6	-68.4	.822	
		3_2	N				1		1	3	+22.1	149.5	+53.9	-66.7	.817	
		3_1	N	1		1			2	6	+22.5	149.0	+53.4	-66.1	.814	
		4_5	S					1	-	1	+21.5	147.8	+52.2	-67.0	.801	
		5_1	N					1	-	2	+23.7	147.2	+51.6	-64.3	.799	
		6	S				1	1	1	4	+21.8	146.1	+50.5	-66.4	.785	
		4_4	S	1		1		1^x	2	10	+21.7	145.5	+49.9	-66.3	.779	x_2
		4_3	S	1		1	1^x		3	9	+22.8	144.7	+49.1	-64.7	.773	x_3
		4_2	S'					1	-	2	+22.3	143.4	+47.9	-65.0	.759	
	112		◊-Ж	6	1	3	4	8	52	330	-24.1	85.6	-10.0	+162.4	.520	
		p	*S*	*1*	*1*		*1*	*2*	*32*	*220*	*-23.7*	*87.8*	*- 7.8*	*+165.5*	*.504*	
		f	*N*	*5*		*3*	*3*	*6*	*20*	*110*	*-25.0*	*81.4*	*-14.2*	*+156.1*	*.552*	
			S)					1	-	1	-25.5	87.9	- 7.7	+166.7	.529	
		1	S	1c	1r				31	214	-23.7	87.8	- 7.8	+165.6	.504	
		3_1	S				1		1	3	-23.8	86.5	- 9.1	+163.4	.511	
		3_2	S					1	-	2	-23.8	85.8	- 9.8	+162.2	.514	
		2_7	N	1		1			2	6	-24.5	84.0	-11.6	+159.8	.532	train
		2_6	N				1		1	7	-24.8	83.3	-12.3	+159.0	.540	
		4_4	N'					1	-	2	-24.5	82.7	-12.9	+157.8	.539	
		2_5	N	1		1			2	6	-25.2	82.6	-13.0	+158.2	.548	
		4_2	N				1		1	8	-23.6	82.3	-13.3	+156.4	.528	
		2_4	N				1		1	5	-25.3	82.0	-13.6	+157.3	.553	
		4_3	N'					1	-	1	-24.1	81.9	-13.7	+156.2	.538	
			N)					4	-	4	-23.8	81.1	-14.5	+154.8	.540	→7
		2_{1-3}	N	3t		1			13+	71	-25.2	80.7	-14.9	+155.3	.559	+4+7+2
Oct 20		*5*	*67*	*14*	*2*	*10*	*8*	*19*	*108*	*624*	*{+5.4}*	*{ 95.6}*		*{+25.9}*	*148*	*867*
293.501 G /1202/	106→	p•1_1	◊ N	1		1			14	63	+19.2	159.4	+76.8	-71.5	.970	
	108↓		Δ Δ					4	-	5	+25.0	107.3	+24.6	-47.6	.513	
		p•1_1	N					*1*	-	*2*	*+25.0*	*110.1*	*+27.4*	*-50.4*	*.544*	
		f	*S*					*3*	-	*3*	*+25.0*	*105.4*	*+22.7*	*-45.7*	*.492*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		(2_4)	S					1	-	1	+24.3	105.8	+23.1	-47.1	.490	
			S)					1	-	1	+26.4	105.3	+22.6	-43.3	.505	
			S)					1	-	1	+24.2	105.2	+22.5	-46.6	.482	
	109→	*p*	Δ *N*					2	-	6	+23.4	163.9	+81.2	-67.2	.985	
		3	N'					1	-	(4)	+23.6	164.2	+81.6	-67.0	.986	
			(N)					1	-	(2)	+23.0	163.2	+80.5	-67.6	.983	
	110		◇-𝍐	4	1	3	1	5	45	276	+21.8	149.2	+66.6	-68.4	.917	
		p	*N*	*3*	*1*	*2*	*1*	*1*	*41*	*232*	*+21.9*	*149.9*	*+67.2*	*-68.5*	*.921*	
		f	*S*	*1*		*1*		*4*	*4*	*44*	*+21.7*	*145.7*	*+63.0*	*-68.4*	*.893*	
		1_{12}	N	1c	1a				27	167	+21.6	150.7	+68.0	-68.8	.926	
		3_2	N'					1	-	3	+21.2	149.7	+67.0	-69.2	.920	
		3_1	N'				1		1	5	+21.6	148.7	+66.1	-68.7	.914	
		5_2	N	1		1			4	16	+23.1	148.1	+65.5	-67.0	.911	
		5_1	N	1		1			9	41	+22.5	147.6	+64.9	-67.6	.907	
		4_5	S'					1	-	3	+20.9	147.0	+64.3	-69.4	.902	
		6	S	1		1			4	24	+21.6	146.2	+63.5	-68.5	.896	
		4_4	S					1	-	8	+21.3	145.6	+62.9	-68.7	.892	
		4_3	S					2	-	9	+22.5	144.1	+61.4	-67.3	.881	→7
	112		𝍐-◙	6	2	1	3	10	66	352	-24.0	85.6	+ 2.9	-174.6	.498	*
		p	*S*	*3*	*1*	*1*			*44*	*241*	*-23.7*	*87.8*	*+ 5.1*	*-170.4*	*.495*	
		f	*N*	*3*	*1*		*3*	*10*	*22*	*111*	*-24.8*	*80.7*	*- 2.0*	*+176.4*	*.505*	
		1	S	1c	1r				39	215	-23.7	88.0	+ 5.3	-170.1	.495	
		3_{12}	S	2		1			5+	26	-23.8	86.3	+ 3.6	-173.2	.493	+3+2
		4_6	N					3	-	5	-23.9	83.8	+ 1.1	-177.9	.490	
		2_7	N					3	-	3	-24.6	83.3	+ 0.7	-178.8	.501	train
		4_5	N					1	-	1	-23.7	82.9	+ 0.2	-179.6	.487	
		2_6	N				1		1	3	-24.7	82.8	+ 0.1	-179.9	.503	
		4_4	N					1	-	2	-24.3	82.4	- 0.3	+179.4	.496	
		2_5	N				1		1	3	-24.7	82.2	- 0.5	+179.2	.502	
		4_3	N				1		1	2	-24.0	81.6	- 1.1	+178.0	.492	
		2_4	N					1	-	2	-25.1	81.3	- 1.4	+177.5	.509	
		2_{1-3}	N	3t	1p				19	88	-24.9	80.2	- 2.4	+175.6	.507	
			N)					1	-	2	-23.6	79.3	- 3.3	+173.7	.488	
		U 2_3	*N*	*1c*					*4*	-	*-25.1*	*80.7*	*- 2.0*	*+176.5*	*.510*	
		U 2_2	*N*	*1b*					*8*	-	*-24.9*	*80.4*	*- 2.3*	*+175.9*	*.506*	
		U 2_1	*N*	*1*					*7*	-	*-24.8*	*79.8*	*- 2.9*	*+174.8*	*.506*	
Oct 21		*5*	*67*	*11*	*3*	*5*	*4*	*21*	*125*	*702*	*{+5.3}*	*{ 82.7}*		*{+25.9}*	*157*	*872*
294.474	110→		◇-𝍐	4	1	2	2	1	33	272	+21.6	149.6	+79.7	-69.0	.980	
G /1123/		*p*	*N*	*3*	*1*	*1*	*1*		*26*	*219*	*+21.6*	*150.5*	*+80.7*	*-69.0*	*.983*	
		f	*S*	*1*		*1*	*1*	*1*	*7*	*53*	*+21.6*	*145.7*	*+75.9*	*-69.0*	*.967*	
		1_{12}	N	1c	1u				19	165	+21.3	151.4	+81.5	-69.3	.986	
		3_{12}	N'				1		1	6	+20.8	150.0	+80.2	-69.8	.982	
		5_{12}	N'	2		1			6	48	+22.8	147.6	+77.8	-67.9	.975	
		4_4	S'				1		1	12	+21.2	146.3	+76.5	-69.4	.969	
		6	S	1		1			6	40	+21.7	145.5	+75.7	-68.9	.966	
		4_3	S'					1	-	1	+22.8	145.0	+75.2	-67.7	.964	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	112		⌑--▣	5	2	1	5	7	62	337	-23.9	85.4	+15.5	-153.4	.547	
		p	*S*	*2*	*1*	*1*	*1*	*1*	*40*	*216*	*-23.6*	*88.1*	*+18.3*	*-149.0*	*.560*	
		f	*N*	*3*	*1*		*4*	*6*	*22*	*121*	*-24.5*	*80.5*	*+10.7*	*-161.2*	*.525*	
			(S)					1	-	1	-26.7	89.3	+19.5	-150.4	.606	
		1	S	1c	1r				37	207	-23.6	88.1	+18.3	-148.9	.560	
		3_{12}	S	1		1	$1^{\times}$		3	8	-23.8	86.8	+16.9	-151.1	.553	$\times_4$
			N					1	-	4	-25.3	83.2	+13.4	-157.5	.550	
		4_6	N				2		2	8	-23.6	83.1	+13.3	-156.4	.527	
		4_5	N				1		1	7	-24.0	82.7	+12.8	-157.4	.529	
		2_6	N					1	-	2	-24.9	82.5	+12.6	-158.4	.540	
			N)					1	-	1	-25.5	81.9	+12.1	-159.6	.545	
		2_5	N				1		1	3	-24.9	81.7	+11.9	-159.5	.536	
		4_4	N					1	-	1	-24.0	81.7	+11.9	-158.9	.524	
		4_3	N					1	-	2	-24.0	81.1	+11.3	-159.8	.520	
			N)					1	-	1	-23.0	80.0	+10.1	-161.1	.502	
		2_{1-4}	N	3d	1n				18	92	-24.6	79.9	+10.1	-162.2	.523	
		U 2_{34}	*N*	*1*					*3*+	-	*-24.9*	*80.4*	*+10.6*	*-161.6*	*.529*	*+2+*
		U 2_2	*N*	*1b*					*12*	-	*-24.5*	*80.0*	*+10.1*	*-162.1*	*.522*	
		U 2_1	*N*	*1c*					*3*	-	*-24.7*	*79.4*	*+ 9.6*	*-163.1*	*.523*	
	113 ↑		△ ◇	1		1		3	2	10	-26.2	39.2	-30.7	+138.2	.688	
		p•1_1	*S*	*1*		*1*			*2*	*5*	*-25.6*	*40.8*	*-29.0*	*+139.0*	*.669*	
		f	*N*					*3*	-	*5*	*-26.7*	*37.5*	*-32.4*	*+137.3*	*.706*	
		2	N					1	-	2	-25.5	39.0	-30.9	+137.2	.684	
			N)					1	-	1	-27.4	37.4	-32.4	+137.9	.712	
			N)					1	-	2	-27.6	36.1	-33.8	+137.1	.725	
Oct 22		*3*	*44*	*10*	*3*	*4*	*7*	*11*	*97*	*619*	*{+5.3}*	*{ 69.8}*		*{+25.8}*	*120*	*684*
295.452	112		◇-▣	3	1	2	2	11	43	246	-23.8	86.9	+30.0	-136.0	.661	
G /1051/		*p*	*S*	*1*	*1*		*1*	*2*	*37*	*216*	*-23.6*	*87.9*	*+31.0*	*-134.8*	*.668*	
		f	*N*	*2*		*2*	*1*	*9*	*6*	*30*	*-24.7*	*80.0*	*+23.0*	*-144.1*	*.608*	
			(S)					1	-	2	-26.4	89.4	+32.5	-136.7	.704	
		1	S	1c	1r				36	211	-23.6	87.9	+31.0	-134.8	.668	
		3_{12}	S'				1		1	2	-23.8	86.2	+29.3	-136.6	.653	
			S)					1	-	1	-23.5	85.3	+28.3	-137.2	.643	
		4_{56}	N					5	-	5	-24.4	81.9	+25.0	-141.7	.622	→12
		4_4	N'					1	-	2	-24.3	81.2	+24.3	-142.3	.614	
		2_5	N'					1	-	1	-25.2	81.1	+24.1	-143.4	.622	
		2_{34}	N				1		1	6	-24.8	80.0	+23.0	-144.3	.610	
		2_2	N	1		1		$2^{\times}$	2	11	-24.6	79.4	+22.5	-144.6	.603	$\times_4$↑
		2_1	N	1		1			3	5	-24.9	78.5	+21.6	-146.0	.599	
	113		◇-▽	1		1	2	2	6	17	-25.6	39.3	-17.6	+151.8	.579	
		p	*S*				*2*	*2*	*2*	*8*	*-25.4*	*40.8*	*-16.1*	*+153.6*	*.566*	
		*f•*2	*N*	*1*		*1*			*4*	*9*	*-25.9*	*38.0*	*-18.9*	*+150.2*	*.591*	
			S)					1	-	1	-24.3	41.7	-15.3	+153.8	.546	
		1_1	S				1		1	4	-25.5	41.4	-15.6	+154.5	.564	
		1_2	S				1	1	1	3	-25.5	39.8	-17.1	+152.3	.574	
	114 ↑	*p•*	△ *(N)*					1	-	1	+16.8	350.3	-66.7	+73.9	.917	
Oct 23		*3*	*38*	*4*	*1*	*3*	*4*	*14*	*49*	*264*	*{+5.2}*	*{ 56.9}*		*{+25.7}*	*74*	*398*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
296.315	112		▽-▣	1	1		1	8	40	252	-23.6	87.4	+41.8	-127.0	.766	
G /0733/		*p*	*S*	*1*	*1*			*1*	*39*	*235*	*-23.5*	*87.8*	*+42.2*	*-126.6*	*.770*	
		f	*N*				*1*	*7*	*1*	*17*	*-24.2*	*81.4*	*+35.8*	*-131.6*	*.717*	
		1	S	1c	1r				39	234	-23.5	87.8	+42.2	-126.6	.770	
		5	S					1	-	1	-25.0	85.2	+39.7	-129.9	.756	
		6_1	N					2	-	4	-23.7	83.3	+37.8	-129.6	.731	
		6_2	N'					1	-	2	-23.6	82.1	+36.6	-130.4	.719	
		4_{56}	N					2	-	5	-24.2	82.1	+36.5	-131.1	.723	
		2_5	N'				1		1	2	-25.3	79.8	+34.2	-134.0	.710	
		2_2	N'					1	-	1	-24.2	79.2	+33.6	-133.3	.696	
		2_{34}	N'					1	-	3	-24.8	79.1	+33.5	-134.0	.700	
	113		◇-△	1		1		3	2	10	-25.8	38.1	- 7.5	+167.2	.528	
		p	*S*					*2*	-	*3*	*-25.0*	*40.0*	*- 5.5*	*+170.1*	*.511*	
		f	*N*	*1*		*1*		*1*	*2*	*7*	*-26.2*	*37.2*	*- 8.3*	*+165.9*	*.536*	
		1_1	S					1	-	2	-25.2	40.6	- 5.0	+171.1	.513	
		1_2	S'					1	-	1	-24.5	38.9	- 6.6	+168.0	.506	
			N					1	-	2	-26.9	37.5	- 8.1	+166.7	.546	
		2	N	1		1			2	5	-25.9	37.1	- 8.4	+165.6	.532	
	114		△ △					2	-	3	+16.8	349.3	-56.2	+73.1	.834	
		p•1_1	*N*					*1*	-	*2*	*+16.4*	*349.1*	*-56.4*	*+73.6*	*.835*	
		f•2	*S*					*1*	-	*1*	*+17.7*	*349.7*	*-55.9*	*+72.1*	*.831*	
	115 ↑	*p*	△ *N*					2	-	5	+20.6	331.0	-74.6	+70.1	.961	*
		1_1	N'					1	-	1	+21.3	332.4	-73.2	+69.3	.955	
		3_1	N					1	-	4	+20.4	330.6	-75.0	+70.3	.963	
Oct 24		*4*	*47*	*2*	*1*	*1*	*1*	*15*	*42*	*270*	*{+5.1}*	*{ 45.6}*		*{+25.6}*	*55*	*347*
297.353	112		▽-▣	1	1		1	2	39	248	-23.4	87.2	+55.4	-120.3	.876	
G /0828/		*p*	*S*	*1*	*1*			*1*	*38*	*237*	*-23.4*	*87.4*	*+55.6*	*-120.2*	*.878*	
		f	*N*				*1*	*1*	*1*	*11*	*-23.5*	*82.4*	*+50.6*	*-122.3*	*.841*	
		1	S	1c	1r				38	236	-23.4	87.4	+55.6	-120.2	.878	
		5	S					1	-	1	-24.4	84.5	+52.6	-122.4	.860	
		6_1	N				1		1	10	-23.5	82.6	+50.8	-122.2	.842	
		6_2	N					1	-	1	-23.5	80.6	+48.8	-123.1	.826	
	113 ↓		△ △					2	-	2	-26.2	38.7	+ 6.9	-168.3	.531	
		p•1_2	*S*					*1*	-	*1*	*-25.3*	*40.6*	*+ 8.7*	*-164.8*	*.524*	
		f•2	*N*					*1*	-	*1*	*-27.0*	*36.8*	*+ 5.0*	*-171.7*	*.538*	
	114 ↓		△ ▽				1	3	1	11	+16.7	349.8	-42.1	+70.8	.683	
		p	*N*				*1*	*2*	*1*	*9*	*+16.5*	*349.7*	*-42.2*	*+71.2*	*.683*	
		f•2	*S*					*1*	-	*2*	*+17.8*	*349.9*	*-42.0*	*+69.2*	*.684*	
		1_2	N					2	-	4	+16.8	350.0	-41.9	+70.6	.681	
		1_1	N				1		1	5	+16.2	349.5	-42.4	+71.6	.685	
	115		▽-◇	4		2	2	2	19	82	+20.4	330.3	-61.6	+69.4	.882	
		p	*N*	*4*		*2*	*1*	*1*	*18*	*73*	*+20.3*	*330.6*	*-61.3*	*+69.5*	*.880*	
		f	*S*				*1*	*1*	*1*	*9*	*+20.7*	*327.9*	*-63.9*	*+69.4*	*.899*	
		1_1	N	1		1			5	7	+22.0	334.1	-57.8	+67.1	.853	
		1_2	N				1	1	1	9	+21.6	333.2	-58.7	+67.8	.860	
		3_{12}	N	3d		1a			12+	57	+19.9	329.8	-62.1	+70.0	.886	+6+4+2

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2	S				1		1	6	+21.3	328.7	-63.1	+68.7	.894	
		4	S					1	-	3	+19.4	326.3	-65.6	+70.9	.910	
Oct 25		*4*	*47*	*5*	*1*	*2*	*4*	*9*	*59*	*343*	*{+5.0}*	*{ 31.9}*		*{+25.5}*	*57*	*336*
298.488 G /1143/	112	*p*•1	✖ *S*	lc lr					42	231	-23.3	86.9	+70.0	-116.0	.961	
	115		▽-◇	3		2	1	7	9	41	+20.5	329.6	-47.3	+66.8	.751	
		p	*N*	*3*		*2*		*4*	*8*	*31*	*+20.4*	*330.4*	*-46.5*	*+66.7*	*.742*	
		f	*S*				*1*	*3*	*1*	*10*	*+20.8*	*327.3*	*-49.6*	*+67.0*	*.776*	
		1_1	N'					1	-	1	+22.3	335.3	-41.6	+62.6	.694	
		3_{12}	N	2		1a			6+	17	+20.5	331.0	-45.9	+66.4	.736	+4+2
			N)					2	-	2	+19.4	330.7	-46.2	+67.9	.736	
		5	N	1		1		1×	2	11	+20.2	328.9	-48.0	+67.4	.758	×2↓
		2	S'					1	-	2	+21.6	328.0	-48.9	+65.8	.770	
		6	S				1	1×	1	6	+20.8	327.3	-49.6	+67.0	.776	×3
		4	S					1	-	2	+20.1	326.6	-50.3	+68.1	.781	
	116↑		△ ▽				1	1	1	5	-17.1	342.4	-34.5	+123.6	.652	
		p•	*S*				*1*		*1*	*3*	*-17.1*	*343.9*	*-33.0*	*+124.8*	*.636*	
		f•	*N*					*1*	-	*2*	*-17.0*	*340.1*	*-36.8*	*+121.9*	*.677*	
Oct 26		*3*	*34*	*4*	*1*	*2*	*2*	*8*	*52*	*277*	*{+4.9}*	*{ 16.9}*		*{+25.4}*	*37*	*189*
299.354 E /0830/	112→	*p*•1	(✖) *S*	(1)(1)					(-)	(5)	(-23.4	86.4	+81.0	-114.3	.994)	
	115		△ ◇	2		2		3	11	66	+20.8	330.2	-35.3	+61.9	.614	
		p	*N*	*2*		*2*		*1*	*11*	*64*	*+20.7*	*330.3*	*-35.1*	*+61.8*	*.613*	
		f	*S*					*2*	-	*2*	*+21.4*	*326.1*	*-39.4*	*+62.8*	*.667*	
		3_{12}	N	1		1		1×	3	30	+21.0	330.9	-34.5	+61.1	.607	×8→5
		5	N	1		1			8	34	+20.5	329.8	-35.7	+62.5	.618	
		2	S					1	-	1	+21.9	326.6	-38.9	+61.9	.663	
			S)					1	-	1	+20.9	325.5	-39.9	+63.7	.671	
	116	*f*•	△ *N*					1	-	3	-16.3	340.3	-25.1	+130.9	.541	
	117↑		◇ ◇	2		2		3	13	63	+31.1	327.9	-37.5	+48.7	.696	
		p•1_{12}	*N*	*1*		*1*		*1*×	*11*	*40*	*+30.8*	*329.4*	*-36.0*	*+48.2*	*.680*	*×10←10*
		f	*S*	*1*		*1*		*2*	*2*	*23*	*+31.6*	*325.4*	*-40.1*	*+49.6*	*.723*	
			S)					1	-	4	+30.5	326.7	-38.8	+50.3	.705	
		2_{12}	S'	1		1		1×	2	19	+31.8	325.1	-40.4	+49.4	.727	×6→4
Oct 27		*4*	*44*	*5*	*1*	*4*		*7*	*24*	*137*	*{+4.8}*	*{ 5.5}*		*{+25.2}*	*36*	*201*
ROT No *1661*																
300.468 G /1114/	115		△≠◇	3		3	1	10	7	23	+21.6	330.8	-20.0	+46.8	.438	
		p	*N*	*3*		*3*	*1*	*5*	*7*	*16*	*+21.7*	*332.0*	*-18.8*	*+45.0*	*.425*	
		f	*S*					*5*	-	*7*	*+21.3*	*328.0*	*-22.8*	*+50.7*	*.468*	
		7	N				1	3	1	6	+22.6	334.5	-16.3	+39.8	.407	
		8	S					1	-	2	+22.6	332.9	-17.9	+42.4	.423	
		continued														

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		3_{12}	N	1		1		1×	2	4	+21.6	331.7	-19.1	+45.9	.426	×↑
		5	N	2		2			4	5	+21.0	330.2	-20.6	+48.9	.437	
		6	S'					1	-	1	+21.4	327.3	-23.5	+51.7	.475	
		9	N'					1	-	1	+20.4	327.3	-23.5	+53.5	.466	
			(S)					1	-	2	+20.8	326.2	-24.6	+53.9	.483	
		10	S'					2	-	2	+20.6	325.1	-25.7	+55.3	.495	↑5
	/116/															INTERMITTENT
	117		◊ ◊	2		2	2		7	33	+31.0	328.1	-22.7	+36.1	.559	
		p	*N*	*1*		*1*	*1*		*4*	*19*	*+30.1*	*330.8*	*-20.0*	*+34.2*	*.527*	
		f	*S*	*1*		*1*	*1*		*3*	*14*	*+32.2*	*324.5*	*-26.3*	*+38.7*	*.603*	
		1_1	N	1		1			3	16	+30.2	330.9	-19.9	+34.0	.527	
		1_2	N				1		1	3	+29.8	330.3	-20.5	+35.3	.527	
		2_1	S	1		1			2	8	+32.4	324.5	-26.3	+38.5	.605	
		2_2	S				1		1	6	+32.0	324.5	-26.3	+38.9	.600	
	118 ↑		Δ ◊	1		1		1	2	6	+19.3	43.3	+52.6	-69.4	.803	
		p•1	*N*	*1*		*1*			*2*	*5*	*+19.4*	*43.9*	*+53.2*	*-69.4*	*.809*	
		f•2	*S'*					*1*	-	*1*	*+18.7*	*40.4*	*+49.6*	*-69.5*	*.772*	
	119 ↦	*p•1*	*H S*	lb	lu				(21)	(102)	-22.8	273.0	-77.8	+114.1	.987	
Oct 28		*4*	*43*	*7*	*1*	*6*	*3*	*11*	*37*	*164*	*{+4.7}*	*{350.8}*		*{+25.1}*		*33 136*
301.201 K /0449/	115		◊+◊	4		3		7	19	100	+21.5	328.7	-12.5	+33.5	.364	
		p	*N*	*2*		*2*		*3*	*10*	*59*	*+21.8*	*331.5*	*- 9.7*	*+27.4*	*.342*	
		f	*S*	*2*		*1*		*4*	*9*	*41*	*+21.2*	*324.6*	*-16.5*	*+42.2*	*.396*	
			(N)					1	-	8	+23.9	337.8	- 3.3	+9.0	.336	
		7	N					1	-	9	+22.7	335.1	- 6.1	+17.4	.327	
		8	S					1	-	5	+23.5	332.6	- 8.5	+22.7	.354	
		3_{12}	N'					1	-	5	+22.3	332.5	- 8.6	+24.4	.335	
		5	N	1		1			6	23	+21.5	329.9	-11.2	+31.7	.345	
		9	N	1		1			4	14	+20.4	327.7	-13.4	+38.3	.351	
		6	S					1	-	3	+21.7	326.7	-14.5	+38.2	.377	
		10	S	2b		1			9	23	+20.9	324.3	-16.8	+43.7	.393	
			S)					1	-	7	+20.7	321.3	-19.9	+48.6	.426	
			S)					1	-	3	+19.7	319.7	-21.4	+52.4	.435	
	/116/															INTERMITTENT
	117		◊–◊	2		2		4	14	63	+32.0	325.7	-15.4	+25.1	.518	
		p	*N*	*1*		*1*		*1*	*8*	*28*	*+30.4*	*331.1*	*-10.0*	*+18.9*	*.463*	
		f	*S*	*1*		*1*		*3*	*6*	*35*	*+33.3*	*321.3*	*-19.8*	*+30.1*	*.563*	
		1_{12}	N	lb		1			8	25	+30.3	331.4	- 9.7	+18.6	.460	
		3	N'					1	-	3	+31.5	328.9	-12.2	+21.7	.491	
		4	S'					1	-	2	+31.3	326.7	-14.4	+25.2	.501	
		2_{12}	S	1		1			6	18	+32.9	324.2	-16.9	+27.2	.537	
			S					1	-	11	+34.0	317.7	-23.4	+33.6	.597	
			S)					1	-	4	+34.0	315.6	-25.6	+35.8	.614	
	118 ↓		Δ Δ					2	-	2	+18.9	42.0	+60.9	-71.0	.875	
		p•1	*N*					*1*	-	*1*	*+19.7*	*44.8*	*+63.7*	*-70.3*	*.898*	
		f•2	*S'*					*1*	-	*1*	*+18.1*	*39.1*	*+58.0*	*-71.6*	*.852*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	119	*p•1*	*N S*	lb	lq				(18)	(150)	-23.0	271.9	-69.3	+116.1	.958	
Oct 29		*4*	*48*	*7*	*1*	*5*		*13*	*51*	*315*	*{+4.6}*	*{341.1}*		*{+25.0}*	*70*	*382*
302.187	115		Δ-◇	2		1		8	5	45	+20.6	327.2	- 0.9	+2.9	.279	
K /0429/		*p•9*	*N*	*2b*		*1a*			*5*	*25*	*+20.2*	*329.0*	*+ 0.9*	*-3.0*	*.271*	
		f	*S*					*8*	-	*20*	*+21.0*	*325.0*	*- 3.1*	*+10.2*	*.290*	
			(S)					1	-	1	+18.4	326.7	- 1.4	+5.6	.242	
			(S)					1	-	3	+23.2	326.4	- 1.7	+4.8	.323	
			S					1	-	4	+20.5	325.9	- 2.2	+7.4	.278	
			(S)					1	-	3	+23.5	325.4	- 2.7	+7.5	.330	
			S)					1	-	1	+19.1	325.0	- 3.1	+11.5	.258	
		10	S					2	-	6	+19.7	323.8	- 4.3	+15.0	.273	↑6
		12	S)					1	-	2	+21.0	323.5	- 4.7	+14.9	.296	
	/116/															INTERMITTENT
	117		▽-◇	2		2	2	4	9	56	+30.9	326.6	- 1.5	+2.3	.450	
		p	*N*	*2*		*2*		*1*	*7*	*25*	*+29.6*	*330.8*	*+ 2.7*	*-5.5*	*.427*	
		f	*S*				*2*	*3*	*2*	*31*	*+31.9*	*323.3*	*- 4.9*	*+8.6*	*.469*	
		1_{12}	N	2		2			7	21	+29.8	331.2	+ 3.1	-6.2	.431	→5
			N)					1	-	4	+28.6	328.8	+ 0.7	-1.6	.409	
		4	S				1		1	13	+30.5	326.1	- 2.0	+4.0	.440	
		2_1	S'					1	-	2	+32.0	323.8	- 4.3	+7.9	.468	
		2_2	S				1		1	8	+32.7	322.7	- 5.4	+9.5	.481	
			S)					1	-	4	+33.7	321.1	- 7.1	+11.9	.500	
			S)					1	-	4	+33.0	317.1	-11.1	+18.6	.507	
	119		(▽)▮	1	1			1	24	215	-23.0	271.5	-56.6	+119.2	.883	*
		p•1	*S*	*1b*	*1q*				*23*	*205*	*-23.1*	*271.5*	*-56.6*	*+119.3*	*.883*	
		(f)•2_1	*N*					*1*	*1*	*10*	*-21.5*	*272.1*	*-56.0*	*+117.8*	*.874*	
	120	⊢	(◇ ◇)	2		2		1	-	51	+19.2	252.5	-75.7	+71.4	.967	
		p	*N*	*1*		*1*		*1*	-	*40*	*+18.8*	*253.7*	*-74.5*	*+71.8*	*.962*	
		f•2_{12}	*S*	*(1)*		*(1)*			*(-)*	*(11)*	*(+20.4*	*248.1*	*-80.1*	*+70.0*	*.983)*	
		1_{12}	N	(1)		(1)			(-)	(39)	+18.8	253.7	-74.5	+71.8	.962	
		1_0	N					1	-	1	+19.5	252.1	-76.1	+71.0	.969	
Oct 30		*4*	*48*	*7*	*1*	*5*	*3*	*13*	*38*	*367*	*{+4.5}*	*{328.1}*		*{+24.8}*	*48*	*414*
303.387	115		Δ-Δ					8	-	11	+21.2	326.7	+14.5	-38.5	.375	
G /0918/		*p*	*N*					*6*	-	*9*	*+21.3*	*327.4*	*+15.1*	*-39.5*	*.384*	
		f	*S*					*2*	-	*2*	*+20.5*	*323.7*	*+11.4*	*-33.8*	*.336*	
		9	N'					1	-	2	+20.3	329.1	+16.9	-44.5	.390	
			(N)					2	-	3	+21.8	328.7	+16.4	-41.0	.402	↑7
		11	N					3	-	4	+21.5	325.6	+13.3	-35.9	.367	→8
		10	S'					1	-	1	+19.7	323.8	+11.5	-35.5	.326	
		12	S'					1	-	1	+21.3	323.5	+11.3	-32.0	.345	
	116		◇-◇	2		2	1	2	7	30	-17.8	345.2	+32.9	-125.3	.635	
		p	*S*	*1*		*1*	*1*	*2*	*3*	*14*	*-18.9*	*346.3*	*+34.0*	*-126.0*	*.655*	
		f•2	*N*	*1*		*1*			*4*	*16*	*-16.8*	*344.2*	*+31.9*	*-124.8*	*.618*	
		1	S	1		1	1×		3	12	-19.0	346.5	+34.2	-125.9	.658	×5
			S					2	-	2	-18.5	345.0	+32.7	-126.4	.639	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	117	◇–◇		2		2	3	7	7	25	+30.0	328.3	+16.0	-28.7	.499	
		p	*N*	*1*		*1*	*2*	*3*	*4*	*14*	*+29.7*	*330.3*	*+18.0*	*-31.9*	*.509*	
		f	*S*	*1*		*1*	*1*	*4*	*3*	*11*	*+30.4*	*325.8*	*+13.5*	*-24.6*	*.486*	
			N					2	-	2	+29.8	331.6	+19.3	-33.7	.521	→6
		1_{12}	N				2		2	6	+29.6	330.6	+18.3	-32.5	.510	→6
			N)					1	-	2	+30.2	330.0	+17.7	-31.0	.512	
		3	N	1		1			2	4	+29.7	329.3	+17.0	-30.7	.501	
			S					2	-	2	+31.1	327.7	+15.5	-26.8	.508	
		4	S	1		1	1×	1+	3	8	+30.0	325.6	+13.3	-24.7	.480	→12↑10yxs
		2_1	S'					1	-	1	+31.7	323.2	+10.9	-19.4	.489	×$_{2}$+$_{3}$
	119	(△)¤		1	1			1	26	187	-22.9	271.6	-40.7	+126.4	.748	
		p•1	*S*	*1c*	*1q*				*26*	*184*	*-22.9*	*271.6*	*-40.7*	*+126.4*	*.748*	
		(f)•2_1	*N*					*1*	-	*3*	*-21.2*	*272.3*	*-40.0*	*+124.7*	*.732*	
	120	¤ ¤		5	2	1		3	40	281	+19.8	251.8	-60.5	+69.7	.874	
		p	*N*	*3*	*1*	*1*		*2*	*21*	*144*	*+19.1*	*254.9*	*-57.4*	*+70.1*	*.849*	
		f•2_{12}	*S*	*2b*	*1p*			*1×*	*19+*	*137*	*+20.5*	*248.5*	*-63.8*	*+69.3*	*.900*	×$_{2}$→+12+7
		1_{12}	N	2b	1p			1×	18+	133	+19.2	255.0	-57.3	+70.0	.848	×$_{2}$←+12+6
		1_o	N	1		1			3	10	+18.4	253.4	-58.9	+71.2	.860	
			N)					1	-	1	+18.6	252.1	-60.2	+71.1	.871	
Oct 31		*5*	*63*	*10*	*3*	*5*	*4*	*21*	*80*	*534*	*{+4.4}*	*{312.3}*		*{+24.7}*	*96*	*630*

304.224 /115/
K /0523/ INTERMITTENT

	116	◇ ◇		2		2		1	6	22	-18.3	346.6	+45.3	-118.3	.768	
		p•1	*S*	*1*		*1*			*4*	*14*	*-19.3*	*347.8*	*+46.6*	*-118.9*	*.785*	
		f•	*N*	*1*		*1*		*1×*	*2*	*8*	*-16.5*	*344.4*	*+43.1*	*-117.2*	*.739*	×↓
	117	◇–◇		2		2	2	6	7	41	+30.6	326.5	+25.1	-39.2	.583	
		p	*N*	*1*		*1*	*1*	*2*	*4*	*17*	*+29.7*	*330.3*	*+29.0*	*-44.0*	*.609*	
		f	*S*	*1*		*1*	*1*	*4*	*3*	*24*	*+31.2*	*323.8*	*+22.4*	*-35.7*	*.565*	
		1_1	N				1		1	5	+29.8	330.9	+29.6	-44.4	.616	
			N)					1	-	1	+30.2	330.4	+29.2	-43.5	.614	
		1_2	N	1		1			3	8	+29.6	330.3	+29.0	-44.1	.608	
		3	N'					1	-	3	+29.4	329.3	+28.0	-43.4	.597	
			(S)					1	-	1	+28.1	326.5	+25.2	-42.6	.558	
		4	S				1		1	7	+29.7	325.2	+23.2	-39.0	.561	
			S					1	-	3	+31.9	324.3	+23.1	-35.5	.576	
		2_1	S	1		1			2	9	+32.0	323.4	+22.2	-34.3	.570	
			S)					1	-	2	+31.8	321.6	+20.4	-32.4	.553	
		(2_2)	S					1	-	2	+32.7	321.3	+20.0	-31.1	.561	
	119	(△)¤		1	1			1	26	185	-22.9	271.1	-30.1	+134.1	.646	
		p•1	*S*	*1c*	*1q*				*26*	*183*	*-22.9*	*271.1*	*-30.1*	*+134.1*	*.646*	
		(f)•2_2	*N*					*1*	-	*2*	*-22.1*	*275.0*	*-26.3*	*+136.8*	*.602*	
	120	◇–¤		3	1	1	1	3	34	260	+20.0	252.1	-49.2	+67.4	.770	
		p	*N*	*1*	*1*		*1*	*2*	*23*	*153*	*+19.5*	*255.0*	*-46.2*	*+67.4*	*.739*	
		f•2_{12}	*S*	*2b*		*1u*		*1×*	*11+*	*107*	*+20.7*	*247.9*	*-53.4*	*+67.5*	*.815*	×$_{3}$↓+6+4+
		1_{12}	N	1b	1p				22	141	+19.5	255.2	-46.0	+67.3	.737	
		1_o	N'					1	-	4	+18.8	254.0	-47.2	+68.6	.749	
			N				1		1	7	+19.9	252.1	-49.1	+67.6	.771	
			N					1	-	1	+18.6	252.0	-49.3	+69.3	.770	
Nov 1		*4*	*54*	*8*	*2*	*5*	*3*	*11*	*73*	*508*	*{+4.3}*	*{301.3}*		*{+24.5}*	*102*	*707*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
305.229	115 ↓	Δ	Δ					2	-	4	+21.4	324.5	+36.5	-60.9	.636	
K /0530/		*p•(11)*	*N*					*1*	-	*2*	*+21.6*	*325.3*	*+37.3*	*-61.0*	*.646*	
		f•(12)	*S*					*1*	-	*2*	*+21.1*	*323.7*	*+35.7*	*-60.8*	*.625*	
	116 ↓	*p•1*	Δ	*S*				1	-	3	-19.7	348.4	+60.4	-114.4	.901	
	117		Δ	◇	1		1	3	4	22	+31.0	328.0	+40.0	-49.7	.726	
		p		*N*	*1*		*1*	*2*	*4*	*17*	*+30.0*	*329.9*	*+41.9*	*-52.0*	*.736*	
		f•		*S*				*1*	-	*5*	*+34.3*	*321.6*	*+33.6*	*-41.8*	*.689*	
				N)				1	-	2	+31.0	331.1	+43.1	-51.4	.752	
		1_2		N	1		1		4	11	+29.7	330.4	+42.4	-52.6	.739	
		1_3		N				1	-	4	+30.5	328.1	+40.1	-50.5	.721	
	119		(▽)I		1	1		1	3	27	164	-22.8	270.9	-17.1	+149.1	.528
		p		*S*	*1*	*1*			*2*	*26*	*155*	*-22.7*	*270.8*	*-17.2*	*+148.8*	*.529*
		(f)		*N*				*1*	*1*	*1*	*9*	*-23.3*	*273.2*	*-14.9*	*+152.9*	*.518*
				N				1		1	6	-23.0	273.8	-14.3	+153.5	.510
				N					1	-	3	-23.9	272.0	-16.0	+151.7	.535
		1		S	1c	1q				26	151	-22.7	270.8	-17.2	+148.8	.528
		1_{o1}		S					2	-	4	-24.2	270.5	-17.5	+149.9	.549
	120		◇	I	3	1	1	3	4	38	197	+19.8	253.0	-35.0	+62.4	.611	
		p		*N*	*1*	*1*		*1*	*2*	*23*	*129*	*+19.5*	*255.8*	*-32.2*	*+61.4*	*.575*	
		f		*S*	*2*		*1*	*2*	*2*	*15*	*68*	*+20.5*	*247.5*	*-40.5*	*+64.1*	*.680*	
		1_{12}		N	1b	1p				22	117	+19.6	256.0	-32.0	+61.2	.573	
				N					1	-	2	+19.4	254.4	-33.6	+62.4	.591	
				N					1	-	4	+18.1	254.3	-33.7	+64.5	.587	
				N				1		1	6	+19.0	254.2	-33.8	+63.2	.592	
		2_2		S				2	1	2	12	+20.4	248.7	-39.3	+63.6	.665	→8xyy
				S					1	-	2	+19.6	247.5	-40.5	+65.3	.676	
		2_1		S	2		1a			13^+	54	+20.5	247.2	-40.8	+64.2	.683	+8+5
Nov 2		*5*	*63*		*5*	*2*	*2*	*4*	*13*	*69*	*390*	*{+4.2}*	*{288.0}*		*{+24.4}*	*111*	*628*
306.185	117 ↓	Δ	Δ					2	-	17	+31.4	325.2	+49.8	-53.5	.810	
K /0427/		*p•1_3*		*N*				*1*	-	*9*	*+31.3*	*328.0*	*+52.6*	*-54.7*	*.832*	
		f•(2_1)		*S*				*1*	-	*8*	*+31.6*	*322.0*	*+46.6*	*-52.1*	*.786*	
	119		(Δ)I		1	1		1	2	25	136	-22.9	270.6	- 4.8	+170.4	.463	
		p		*S*	*1*	*1*		*1*	*1*	*25*	*134*	*-23.0*	*270.5*	*- 4.9*	*+170.2*	*.463*	
		(f)•(2_2)		*N*					*1*	-	*2*	*-22.6*	*275.4*	*0.0*	*+180.0*	*.452*	
		1		S	1c	1r				24	122	-22.8	270.6	- 4.8	+170.3	.461	
		1_{o1}		S				1		1	11	-24.6	270.0	- 5.4	+169.9	.490	
				S					1	-	1	-23.3	268.4	- 7.0	+166.3	.475	
	120		◇	I	2	1	1		3	25	143	+19.8	253.6	-21.8	+51.2	.446	
		p•1_{12}		*N*	*1b*	*1p*				*17*	*98*	*+19.5*	*256.6*	*-18.8*	*+48.5*	*.407*	
		f		*S*	*1*		*1*		*3*	*8*	*45*	*+20.3*	*247.2*	*-28.2*	*+57.2*	*.531*	
				S					1	-	4	+18.3	248.7	-26.7	+59.4	.497	
		2_2		S					2	-	8	+20.5	248.3	-27.1	+55.9	.517	
		2_1		S	1		1			8	33	+20.5	246.7	-28.7	+57.3	.538	
Nov 3		*3*	*40*		*3*	*2*	*1*	*1*	*7*	*50*	*296*	*{+4.1}*	*{275.4}*		*{+24.2}*	*89*	*516*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
307.579	119	*p*	H *S*	1 1				2	19	135	-23.0	270.6	+13.5	-154.6	.502	
G /1353/		1	S	1c 1r					19	132	-23.0	270.6	+13.5	-154.5	.502	
		1_{01}	S'					1	-	1	-25.3	269.6	+12.6	-158.0	.528	
			S					1	-	2	-24.6	268.1	+11.1	-159.9	.510	
	120		Δ ◇	3		2		5	19	96	+20.1	256.2	- 0.8	+2.3	.281	
		p	*N*	*3*		*2*		*1*	*19*	*88*	*+19.9*	*257.0*	*- 0.1*	*+0.1*	*.276*	
		f	*S*					*4*	-	*8*	*+21.4*	*248.0*	*- 9.1*	*+26.4*	*.338*	
		1_1	N	1		1			8	39	+20.0	257.5	+ 0.5	-1.7	.277	
		1_2	N	2		1			11+	46	+19.8	256.6	- 0.5	+1.6	.274	+6+5
		1_3	N'					1	-	3	+21.0	256.4	- 0.6	+1.9	.293	
			(S)					1	-	2	+24.1	251.1	- 6.0	+15.4	.358	
			(S)					1	-	1	+24.5	249.3	- 7.7	+19.1	.374	
		2_3	S'					1	-	2	+18.8	247.6	- 9.4	+31.1	.301	
		2_1	S					1	-	3	+20.3	245.7	-11.3	+33.1	.338	
Nov 4		*2*	*28*	*4*	*1*	*2*		*7*	*38*	*231*	*{+4.0}*	*{257.0}*		*{+23.9}*	*69*	*418*
308.405	119	*p*	H *S*	1 1				1	18	144	-22.8	270.1	+24.0	-139.8	.583	
G /0944/		1	S	1c 1r					18	139	-22.9	270.3	+24.2	-139.7	.585	
			(S)					1	-	5	-21.3	265.4	+19.3	-143.9	.524	
	120		Δ ◇	3		2	1	3	12	59	+20.2	256.8	+10.7	-31.6	.334	
		p	*N*	*3*		*2*	*1*	*1*	*12*	*57*	*+20.2*	*257.2*	*+11.0*	*-32.5*	*.336*	
		f+2_3	*S*					*2*	-	*2*	*+19.2*	*248.0*	*+ 1.9*	*-6.8*	*.267*	
		1_1	N	1		1a			6	26	+20.0	257.9	+11.8	-34.6	.339	
		1_2	N	2b		1n			5	22	+20.1	256.7	+10.6	-31.6	.331	
		1_3	N				1		1	7	+21.0	256.4	+10.3	-29.4	.341	
		1_4	N'					1	-	2	+21.1	255.0	+ 8.8	-25.8	.331	
Nov 5		*2*	*27*	*4*	*1*	*2*	*1*	*4*	*30*	*203*	*{+3.9}*	*{246.1}*		*{+23.8}*	*52*	*345*
309.436	119	*p*	H *S*	2 1	1				18	120	-23.0	270.0	+37.4	-128.1	.713	
G /1028/		1	S	1c 1r					16	114	-23.0	270.1	+37.5	-128.0	.714	
		1_{02}	S	1		1			2	6	-23.7	267.5	+35.0	-130.6	.694	
	120	*p*	◇ *N*	4		2	2	5	13	41	+20.9	257.2	+24.6	-52.5	.493	
		1_1	N	2b		1			4	10	+20.2	258.3	+25.7	-54.8	.501	
			N)				1	2	1	5	+20.1	257.0	+24.5	-53.6	.486	
		1_{23}	N	2b		1n		1×	7	21	+21.2	257.0	+24.5	-51.8	.494	×←
		1_4	N				1	2	1	5	+21.5	255.7	+23.1	-49.8	.481	
Nov 6		*2*	*25*	*6*	*1*	*3*	*2*	*5*	*31*	*161*	*{+3.8}*	*{232.5}*		*{+23.5}*	*48*	*241*
310.473	119	*p*	H *S*	1 1				1	16	124	-23.0	270.0	+51.1	-120.8	.836	
G /1121/		1	S	1c 1r					16	123	-23.0	270.0	+51.1	-120.8	.836	
		1_{02}	S					1	-	1	-24.3	266.8	+48.0	-123.6	.815	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	120	*p*	◇ *N*	2		1	1	2	7	49	+20.8	257.1	+38.3	-62.0	.658	
		1_1	N				1		1	5	+20.2	257.9	+39.1	-63.3	.664	
			N					1	-	1	+18.8	257.6	+38.8	-65.2	.655	
		1_{23}	N	2		1			6+	42	+20.9	257.0	+38.2	-61.9	.657	+3+2+
		1_4	N'					1	-	1	+22.6	255.8	+37.0	-58.8	.651	
	121↑	*p*•1	△ (*N*)					1	-	2	+23.4	166.0	-52.9	+63.8	.818	
	122↦	*p*•1	◇ *N*	1		1			7	44	(+23.7)	139.7	-79.1	(+66.6)	.981	
Nov 7		*4*	*45*	*4*	*1*	*2*	*1*	*4*	*30*	*219*	*{+3.7}*	*{218.9}*		*{+23.3}*	*31*	*229*
311.333	119	*p*•1	⌘ *S*	lc	lr				17	129	-23.3	269.3	+61.8	-117.6	.914	
K /0759/	120	*p*	▽ *N*				2	1	2	28	+20.1	257.2	+49.7	-67.0	.780	
		1_1	N					1	-	4	+19.8	258.1	+50.6	-67.5	.789	
		1_{23}	N				2		2	24	+20.1	257.0	+49.5	-66.9	.778	
	121↓	*p*•1	△ (*N*)					1	-	1	+23.5	166.3	-41.3	+59.7	.701	
	122	*p*•1	◇ *N*	1		1			10	62	+24.3	139.2	-68.4	+65.3	.934	
Nov 8		*4*	*44*	*2*	*1*	*1*	*2*	*2*	*29*	*220*	*{+3.6}*	*{207.5}*		*{+23.1}*	*23*	*185*
312.268	119→	*p*•1	◇ *S*	1		1			(12)	(72)	-23.2	268.8	+73.6	-114.9	.973	
K /0626/	120	*p*•1_{23}	▽ *N*				1		1	5	+19.8	257.4	+62.2	-69.5	.891	
	122		△ ◇	1		1		1	8	57	+24.3	138.5	-56.7	+63.5	.852	
		p•1	*N*	*1*		*1*			*8*	*56*	*+24.3*	*138.6*	*-56.6*	*+63.5*	*.852*	
		f•2	*S*					*1*	-	*1*	*+24.7*	*135.4*	*-59.8*	*+63.6*	*.878*	
	123↑		◇–▽	1		1	1	3	5	31	-23.4	145.4	-49.8	+121.7	.826	
		p	*S*				*1*	*1*	*1*	*7*	*-23.3*	*148.0*	*-47.2*	*+122.8*	*.803*	
		f	*N*	*1*		*1*		*2*	*4*	*24*	*-23.4*	*144.7*	*-50.6*	*+121.4*	*.833*	
			S)					1	-	3	-23.4	149.1	-46.1	+123.4	.794	
		1	S				1		1	4	-23.2	147.2	-48.0	+122.3	.810	
		2_0	N					1	-	3	-22.4	146.2	-49.0	+120.9	.815	*
		2_2	N					1	-	3	-24.4	144.6	-50.6	+122.5	.836	
		2_1	N	1		1			4	18	-23.4	144.4	-50.8	+121.3	.835	
Nov 9		*4*	*43*	*3*		*3*	*2*	*4*	*26*	*165*	*{+3.5}*	*{195.2}*		*{+22.9}*	*20*	*132*
313.222	120→	*p*•1_{23}	▽ *N*				1		1	11	+19.1	256.6	+74.0	-71.1	.962	
K /0520/	122	*p*	◇ *N*	1		1		1	6	34	+24.2	138.4	-44.2	+59.8	.738	
			N)					1	-	3	+23.9	139.4	-43.2	+59.7	.727	
		1	N	1		1			6	31	+24.2	138.3	-44.3	+59.8	.739	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	$L_{CM}{}^\circ$	ϑ°	r/R	EXTRA DATA
continued																
	123	◇–◇		2		2		1	8	32	-23.8	145.7	-36.9	+129.1	.710	
		p•1	*S*	*1*		*1*			*3*	*14*	*-22.9*	*148.0*	*-34.7*	*+129.5*	*.682*	
		f	*N*	*1*		*1*		*1*	*5*	*18*	*-24.5*	*144.0*	*-38.7*	*+128.7*	*.731*	
		2_o	N					1	-	3	-21.6	147.2	-35.5	+127.4	.681	
		2_{12}	N	1		1			5	15	-25.1	143.3	-39.3	+129.0	.741	
Nov 10		*3*	*32*	*3*		*3*	*1*	*2*	*15*	*77*	*{+3.4}*	*{182.6}*		*{+22.7}*	*10*	*97*
314.228	122	*p•1*	◇ *N*	1		1			6	40	+24.0	137.7	-31.7	+53.0	.603	
K /0528/																
	123	◇–△		1		1		5	4	46	-22.1	147.0	-22.3	+140.4	.553	
		p	*S*					*2*	-	*12*	*-22.0*	*149.1*	*-20.3*	*+142.9*	*.533*	
		f	*N*	*1*		*1*		*3*	*4*	*34*	*-22.2*	*146.3*	*-23.1*	*+139.6*	*.561*	
		1	S'					1	-	4	-21.9	150.2	-19.2	+144.2	.523	
		2_o	N					1	-	7	-21.0	149.4	-20.0	+141.9	.520	
		3	S					1	-	8	-22.0	148.6	-20.8	+142.2	.538	
		4_2	N					1	-	5	-21.8	146.8	-22.6	+139.7	.553	
		4_1	N	1		1			4	18	-22.0	145.8	-23.6	+138.7	.564	
		2_{12}	N					1	-	4	-25.3	142.6	-26.7	+139.3	.626	
Nov 11		*2*	*23*	*2*		*2*		*5*	*10*	*86*	*{+3.3}*	*{169.4}*		*{+22.4}*	*16*	*140*
315.407	122	△ ◇		1		1	1	3	6	23	+24.0	136.8	-17.0	+36.8	.448	
G /0946/		*p*	*N*	*1*		*1*	*1*	*1*	*6*	*20*	*+24.0*	*137.1*	*-16.7*	*+36.4*	*.446*	
		f↓2	*S*					*2*	-	*3*	*+23.9*	*134.8*	*-19.0*	*+39.7*	*.467*	*→6↓6*
		1	N	1		1		1×	5	15	+24.1	137.3	-16.5	+35.9	.445	×←
			N				1		1	5	+23.6	136.5	-17.3	+37.8	.447	
	123	◇–△		1		1	2	4	4	20	-22.5	145.6	- 8.2	+163.1	.453	
		p	*S*					*2*	-	*3*	*-22.9*	*148.3*	*- 5.5*	*+168.7*	*.450*	
		f	*N*	*1*		*1*	*2*	*2*	*4*	*17*	*-22.4*	*145.2*	*- 8.6*	*+162.1*	*.454*	
		3	S'					1	-	1	-21.6	150.0	- 3.8	+171.6	.425	
		5	S'					1	-	2	-23.6	147.5	- 6.3	+167.3	.462	
		4_{12}	N	1		1	1×		3	10	-21.8	145.5	- 8.3	+162.3	.444	$\times_3\rightarrow$
			N)				1		1	3	-22.7	144.9	- 8.9	+161.8	.460	
		6	N					2	-	4	-23.6	144.5	- 9.3	+161.7	.475	↑5
	124|→	◇ ¤		2	1	1	1		33	177	+37.2	83.6	-70.2	+51.9	.954	
		p•1₁₂	*N*	*1c*	*1a**				*30*	*157*	*+37.3*	*84.3*	*-69.5*	*+51.7*	*.952*	
		f↓2	*S*	*1*		*1*	*1×*		*3*	*20*	*+36.2*	*78.5*	*-75.3*	*+53.4*	*.973*	$\times_8\downarrow 6$
Nov 12		*3*	*34*	*4*	*1*	*3*	*4*	*7*	*43*	*220*	*{+3.1}*	*{153.8}*		*{+22.2}*	*38*	*182*
316.210	122	*p•1*	◇ *N*	1		1			4	20	+24.0	137.3	- 5.9	+14.7	.373	
K /0502/																
	123	◇–▽		1		1	1	2	3	28	-22.3	145.4	+ 2.2	-175.4	.431	
		p	*S*				*1*	*1*	*1*	*8*	*-23.2*	*146.5*	*+ 3.3*	*-173.3*	*.448*	
		f	*N*	*1*		*1*		*1*	*2*	*20*	*-21.9*	*144.9*	*+ 1.7*	*-176.3*	*.424*	
		5	S					1	-	3	-23.6	147.9	+ 4.7	-170.5	.456	
			S				1		1	5	-23.0	145.7	+ 2.5	-174.9	.443	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		4_{12}	N	1		1			2	16	-21.6	145.1	+ 1.9	-175.8	.419	
		6	N					1	-	4	-23.2	144.1	+ 0.8	-178.3	.443	
	124		◇ ¤	3	1	1			26	209	+37.4	82.6	-60.6	+49.7	.908	
		p•1_{12}	N	*1c*	*1a**				*22*	*181*	*+37.6*	*83.4*	*-59.9*	*+49.3*	*.905*	
		f•2	S	*2b*		*1*			*4*	*28*	*+36.0*	*77.8*	*-65.4*	*+52.3*	*.931*	
Nov 13		*3*	*35*	*5*	*1*	*3*	*1*	*2*	*33*	*257*	*{+3.0}*	*{143.2}*		*{+21.9}*	*34*	*262*
317.497	122		Δ–◇	1		1		3	2	13	+23.9	136.3	+10.1	-24.0	.395	
G /1156/		p•1	N	*1*		*1*			*2*	*9*	*+23.9*	*137.3*	*+11.1*	*-26.1*	*.401*	
		f	S					*3*	-	*4*	*+23.8*	*134.2*	*+ 7.9*	*-19.4*	*.381*	
			(S)					1	-	1	+24.8	135.6	+ 9.3	-21.5	.403	
		2	S					2	-	3	+23.5	133.7	+ 7.4	-18.7	.373	→6
	123	f•6	▽ N					1	1	5	-23.6	143.3	+17.1	-148.8	.521	
	124		◇ ¤	3	1	1			29	185	+37.7	81.3	-44.9	+43.8	.809	
		p•1_{12}	N	*2b*	*1p*				*24*	*161*	*+37.9*	*81.9*	*-44.3*	*+43.3*	*.806*	
		f•2	S	*1*		*1*			*5*	*24*	*+36.2*	*77.6*	*-48.7*	*+47.1*	*.830*	
		U 1_1	N	*1*					*13*	-	*+37.9*	*82.4*	*-43.8*	*+43.0*	*.803*	
		U 1_2	N	*1b*					*11+*	-	*+38.0*	*81.3*	*-44.9*	*+43.5*	*.810*	+10+
	125↑		▽–◇	1		1	2	1	4	34	-25.0	191.0	+64.7	-118.3	.932	*
		p•1	S	*1*		*1*	*1×*		*3*	*26*	*-25.1*	*191.9*	*+65.6*	*-118.2*	*.937*	×6
		f	N				*1*	*1*	*1*	*8*	*-24.7*	*188.2*	*+61.9*	*-118.6*	*.915*	
		2	N				1		1	6	-24.3	189.1	+62.8	-118.0	.920	
			N)					1	-	2	-25.7	185.6	+59.3	-120.5	.901	
	126↦	p•1	Δ N					2	-	5	+29.4	63.6	-62.6	+58.7	.908	
	127↦		Δ(▽)				1	1	-	7	-19.5	48.3	-78.0	+110.5	.983	
		p•1	S				*(1)*		*(-)*	*(5)*	*-19.0*	*50.3*	*-75.9*	*+110.2*	*.978*	
		f•2	N					*(1)*	*(-)*	*(2)*	*(-20.7*	*43.2*	*-83.1*	*+111.1*	*.996)*	
Nov 14		*6*	*66*	*5*	*1*	*3*	*4*	*7*	*36*	*249*	*{+2.9}*	*{126.3}*		*{+21.6}*	*42*	*281*
318.273 /122/																INTERMITTENT
G /0633/																
/123/																INTERMITTENT
	124		◇ ¤	3	1	1			22	183	+38.0	80.6	-35.5	+38.1	.744	
		p•1_{12}	N	*2b*	*1q*				*20*	*160*	*+38.2*	*81.2*	*-34.9*	*+37.5*	*.741*	
		f•2	S	*1*		*1*			*2*	*23*	*+36.3*	*76.3*	*-39.7*	*+42.5*	*.764*	
		U 1_1	N	*1*					*13*	-	*+38.2*	*81.6*	*-34.5*	*+37.2*	*.738*	
		U 1_2	N	*1*					*7*	-	*+38.2*	*80.4*	*-35.6*	*+38.0*	*.746*	
	125→		¤–◇	2		2		1	28	127	-24.1	190.5	+74.5	-115.5	.975	
		p•1_{12}	S	*1*		*1*			*8*	*45*	*-23.4*	*192.9*	*+76.9*	*-114.5*	*.983*	
		f	N	*1*		*1*		*1*	*20*	*82*	*-24.4*	*189.2*	*+73.2*	*-116.0*	*.971*	
			N)					1	-	1	-25.4	190.0	+74.0	-116.9	.975	
		2	N	1		1			20	81	-24.4	189.2	+73.2	-116.0	.971	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	126 ↓		Δ ◇	1		1		1	2	17	+28.8	63.4	-52.6	+56.7	.834	
		p•1	*N*	*1*		*1*			*2*	*13*	*+29.2*	*64.2*	*-51.8*	*+56.1*	*.829*	
		f•2	*S*					*1*	-	*4*	*+27.7*	*61.0*	*-55.1*	*+58.8*	*.850*	
	127		Δ ◇	1		1		1	12	35	-18.8	50.6	-65.4	+111.6	.927	
		p•1	*S*	*1*		*1*			*12*	*34*	*-18.8*	*50.8*	*-65.2*	*+111.6*	*.926*	
		f•2	*N*					*1*	-	*1*	*-20.5*	*43.2*	*-72.8*	*+112.1*	*.967*	
	128 ↑	*p•1*	◇ *S*	1		1			3	21	-25.3	136.9	+20.9	-145.4	.571	
Nov 15		*5*	*58*	*8*	*1*	*6*		*3*	*67*	*383*	*{+2.8}*	*{116.0}*		*{+21.4}*	*58*	*380*
319.207 /122/																INTERMITTENT
K /0458/																
	123	*f•8₁*	◇ *N*	1		1			3	17	-23.3	143.6	+39.9	-126.0	.730	
	124	*p*	◇ *N*	4		2			18	100	+38.5	80.1	-23.6	+28.0	.669	
		1_1	N	2		1			11^+	59	+38.5	80.8	-22.9	+27.4	.664	+9+2
		1_2	N	2		1			7^+	41	+38.5	79.2	-24.6	+28.9	.676	+5+2
	127		Δ ◇	1		1		3	10	82	-18.7	49.8	-53.9	+114.4	.841	
		p	*S*	*1*		*1*		*2*	*10*	*72*	*-18.4*	*50.9*	*-52.9*	*+114.4*	*.832*	
		f•2	*N*					*1*	-	*10*	*-20.8*	*42.1*	*-61.6*	*+114.5*	*.906*	
		1	S	1		1			10	56	-18.7	51.1	-52.7	+114.7	.831	
			S)					1	-	10	-17.0	50.4	-53.3	+112.6	.833	
			S)					1	-	6	-18.4	49.9	-53.8	+114.0	.841	
	128	*p•1*	▽ *S*				1		1	4	-24.2	138.3	+34.5	-130.7	.684	
Nov 16		*4*	*45*	*6*		*4*	*1*	*3*	*32*	*203*	*{+2.7}*	*{103.7}*		*{+21.1}*	*43*	*266*
320.515	122 ↓		Δ ◇	1		1		1	2	8	+25.2	135.5	+49.0	-59.7	.794	
G /1222/		*p•*	*N*	*1*		*1*			*2*	*6*	*+25.1*	*136.0*	*+49.5*	*-60.0*	*.798*	
		f•	*S*					*1*	-	*2*	*+25.4*	*134.0*	*+47.5*	*-58.9*	*.780*	
	123		◇ ◇	2		2		4	4	22	-24.2	145.6	+59.1	-118.8	.895	
		p	*S*	*1*		*1*		*2*	*2*	*13*	*-24.0*	*146.6*	*+60.1*	*-118.2*	*.901*	
		f	*N*	*1*		*1*		*2*	*2*	*9*	*-24.6*	*144.2*	*+57.7*	*-119.6*	*.886*	
		(S)						1	-	2	-22.1	147.4	+60.9	-116.0	.903	
		7	S	1		1		1×	2	11	-24.3	146.4	+60.0	-118.6	.901	×4+6
		8_2	N	1		1			2	5	-24.8	144.6	+58.2	-119.7	.890	
		8_1	N					2	-	4	-24.3	143.6	+57.1	-119.5	.882	→6
	124		◇ ◇ δ	4		4			15	113	+38.6	78.1	- 8.4	+11.0	.603	*
		p	*N*	*3*		*3*			*12*	*89*	*+38.4*	*78.5*	*- 8.0*	*+10.5*	*.598*	
		f•4	*S*	*1b*		*1*			*3*	*24*	*+39.4*	*76.6*	*- 9.9*	*+12.5*	*.618*	
		1_1	N	1b		1			8	42	+38.3	79.7	- 6.8	+9.0	.594	
		1_2	N	1		1			2	18	+38.6	78.1	- 8.4	+11.0	.603	
		3	N	1b		1			2	29	+38.4	77.0	- 9.5	+12.5	.602	
	127	*p•1*	◇ *S*	1		1a			2	12	-18.4	51.1	-35.4	+122.5	.653	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	128	*p*•1	◇ *S*	1		1			3	11	-24.4	140.2	+53.7	-120.7	.856	
	129 ↑		◇ δ	8	1	5	3	5	42	178	+22.6	63.8	-22.7	+45.7	.500	*
		p	*N*	*4*	*1*	*1*	*2*	*2*	*25*	*126*	*+22.5*	*64.5*	*-22.0*	*+45.1*	*.490*	
		f	*S*	*4*		*4*	*1*	*3*	*17*	*52*	*+23.0*	*61.9*	*-24.6*	*+47.3*	*.523*	
		1_o	N	1		1		1×	3	9	+23.4	65.7	-20.8	+42.2	.486	×2←
		3_1	N'					1	–	1	+24.6	64.7	-21.8	+41.7	.510	
		1	N	3b	1u				20+	103	+22.2	64.5	-22.0	+45.5	.488	+16+2+2
			N				1		1	11	+23.4	64.1	-22.4	+44.2	.504	
		4	S	1		1		1×	5	6	+21.6	63.2	-23.3	+48.0	.496	×←6
		3_2	N				1		1	2	+25.6	63.1	-23.4	+42.2	.536	
		2_2	S	1b		1u			4	11	+23.7	62.1	-24.3	+45.9	.527	
		6	S	1b		1			3	12	+21.9	61.7	-24.8	+49.3	.516	
		2_1	S	1b		1u			4	15	+23.2	61.7	-24.8	+47.3	.527	
		2_3	S				1	2	1	8	+24.4	61.3	-25.2	+45.8	.543	→7↑7yxx
	130 ↑	(*p*)•	△ (*N*)					1	–	1	+20.0	39.8	-46.7	+65.3	.754	
	131 ↑		△ ◇	1		1		1	3	9	+14.6	30.4	-56.0	+74.2	.836	
		p•1	*N*	*1*		*1*			*3*	*7*	*+14.5*	*31.3*	*-55.1*	*+74.2*	*.828*	
		f•	*S*					*1*	–	*2*	*+14.8*	*27.2*	*-59.3*	*+74.3*	*.866*	
Nov 17		*8*	*91*	*18*	*1*	*15*	*3*	*12*	*71*	*354*	*{+2.5}*	*{ 86.5}*		*{+20.8}*	*112*	*557*
321.499	123 →		◇ ▽	1		1	1		4	22	-23.9	144.4	+70.9	-115.8	.960	
G /1158/		*p*•7	*S*				*1*		*(1)*	*(8)*	*-23.1*	*147.3*	*+73.8*	*-114.5*	*.972*	
		f•8	*N*	*1*		*1*			*3*	*14*	*-24.4*	*142.7*	*+69.2*	*-116.5*	*.953*	
	124	*p*	◇ *N*	2		2		1	8	50	+38.4	78.4	+ 4.9	-6.4	.594	
		1_1	N	1		1			6	43	+38.4	78.8	+ 5.3	-7.0	.595	
		3	N	1		1		1×	2	7	+38.2	75.7	+ 2.2	-3.0	.587	×↓5
	127	*p*•1	◇ *S*	1		1			5	9	-17.7	51.4	-22.1	+133.5	.497	
	128 →	*p*•1	△ *S*					1	–	3	-24.4	140.3	+66.8	-117.1	.942	
	129			12	2	2	2	3	90	602	+23.4	62.7	-10.9	+25.6	.400	
		p	*N*	*5*	*1*		*2*	*3*	*46*	*240*	*+22.5*	*64.6*	*- 8.9*	*+22.5*	*.376*	
		f	*S*	*7*	*1*	*2*			*44*	*362*	*+23.9*	*61.4*	*-12.2*	*+27.6*	*.416*	
		1_o	N					1	–	1	+23.3	66.9	- 6.6	+16.4	.374	
		1	N	5b	1u				44+	231	+22.4	64.6	- 8.9	+22.6	.374	+22+11+
		3_1	N				2		2	6	+25.3	64.3	- 9.2	+20.4	.418	+5+4+2
		3_2	N					2	–	2	+25.4	63.2	-10.3	+22.5	.426	
		2_{124}	S	5d	1u				38	338	+23.9	61.5	-12.1	+27.5	.415	
		6	S	1		1			2	4	+22.2	61.1	-12.4	+30.4	.396	
		2_3	S	1		1a			4	20	+24.7	60.4	-13.2	+28.6	.435	
		U 2_4	*S*	*2b*					*7*	–	*+23.8*	*62.6*	*-10.9*	*+25.4*	*.406*	↑7
		U 2_2	*S*	*2b*					*17*	–	*+24.1*	*61.5*	*-12.0*	*+27.1*	*.417*	↑5
		U 2_1	*S*	*1b*					*14*	–	*+23.7*	*60.8*	*-12.7*	*+29.0*	*.418*	
	130 ↓	(*p*)•	△ (*N*)					1	–	1	+20.6	38.5	-35.0	+59.3	.628	
	131 ↓	*p*•1	▽ *N*				1		1	3	+14.2	32.5	-41.0	+71.4	.673	
Nov 18		*7*	*94*	*16*	*2*	*6*	*4*	*6*	*108*	*690*	*{+2.4}*	*{ 73.5}*		*{+20.5}*	*191*	*1218*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
322.456	124		Δ ◊	1		1		2	5	13	+38.4	76.6	+15.7	-19.6	.631	
G /1056/		*p*	*N*	*1*		*1*		*1*	*5*	*12*	*+38.6*	*77.4*	*+16.5*	*-20.5*	*.636*	
		f•2_0	*S)*					*1*	-	*1*	*+36.4*	*66.9*	*+ 5.9*	*-8.4*	*.570*	
		1_1	N	1		1			5	10	+38.6	77.9	+17.0	-21.1	.639	
		3	N'					1	-	2	+38.3	74.7	+13.8	-17.6	.620	
	127		Δ Δ					2	-	4	-18.3	49.2	-11.7	+151.8	.402	
		p•1	*S'*					*1*	-	*3*	*-17.3*	*51.2*	*- 9.7*	*+154.2*	*.373*	
		f•	*N)*					*1*	-	*1*	*-21.2*	*43.3*	*-17.6*	*+144.7*	*.489*	
	129		◙‡◊ δ	11	1	6	2	5	75	551	+23.8	61.8	+ 0.9	- 2.4	.368	
		p	*N*	*6*		*5*	*2*	*1*	*24*	*136*	*+22.5*	*64.1*	*+ 3.2*	*-8.3*	*.352*	
		f	*S*	*5*	*1*	*1*		*4*	*51*	*415*	*+24.2*	*61.1*	*+ 0.2*	*-0.5*	*.374*	
		1_{31}	N				1		1	7	+23.1	65.9	+ 5.0	-12.7	.366	
		1_1	N	2		1			5	24	+22.0	65.2	+ 4.3	-11.6	.346	
		1_{32}	N	1		1			3	14	+23.3	65.0	+ 4.2	-10.5	.366	
		1_2	N	1		1			7	41	+22.5	64.8	+ 3.9	-10.2	.353	
		3_{12}	N	1		1			3	9	+24.9	64.5	+ 3.6	-8.4	.391	
		1_4	N				1	$1^{\times}$	1	10	+21.7	63.5	+ 2.7	-7.4	.337	$^{\times}{}_4\rightarrow 7$
			S					2	-	3	+25.8	63.5	+ 2.6	-5.9	.403	→8
			S					2	-	6	+26.1	61.8	+ 0.9	-2.0	.406	→6
		5_1	N	1b		1			4^{+}	31	+22.0	61.4	+ 0.5	-1.5	.338	$^{+}2+$
		2_{1-4}	S	2b	1				41	(346	+24.2	61.2	+ 0.3	-0.8	.374	
		6	S'	3		1			10	(60	+23.8	60.2	- 0.7	+1.8	.369	
		U 2_{2-4}	*S*	*1b*					*23*	-	*+24.4*	*61.5*	*+ 0.6*	*-1.7*	*.378*	
		U 2_1	*S*	*1b*					*18*	-	*+23.9*	*60.9*	*0.0*	*0.0*	*.370*	
Nov 19		*3*	*51*	*12*	*1*	*7*	*2*	*9*	*80*	*568*	*{+2.3}*	*{ 60.9}*		*{+20.2}*	*147*	*1052*
323.489	124		Δ ◊	1		1		1	3	12	+38.4	75.9	+28.6	-32.1	.705	
G /1144/		*p*•1_1	*N*	*1*		*1*			*3*	*11*	*+38.6*	*76.7*	*+29.5*	*-32.7*	*.713*	
		f•2_0	*S)*					*1*	-	*1*	*+36.1*	*66.5*	*+19.2*	*-25.5*	*.622*	
	127 ↓	*f*•	Δ *N)*					1	-	1	-21.5	42.3	- 5.0	+168.6	.410	
	129		◙‡◊ δ	11	2	4	1	6	66	410	+24.2	61.0	+13.7	-29.9	.435	
		p	*N*	*4*		*3*	*1*	*6*	*13*	*94*	*+22.5*	*62.3*	*+15.0*	*-34.3*	*.425*	
		f	*S*	*7*	*2*	*1*			*53*	*316*	*+24.6*	*60.6*	*+13.3*	*-28.6*	*.439*	
		1_{31}	N					1	-	2	+22.7	66.5	+19.2	-40.7	.468	
		1_1	N	1b		1			2	8	+21.2	65.1	+17.9	-41.2	.436	
		1_{32}	N	1		1			2	6	+23.2	64.9	+17.6	-37.7	.457	
		3_{12}	N				1	$1^{\times}$	1	8	+24.8	64.8	+17.5	-35.3	.475	$^{\times}{}_4\rightarrow 5$
		1_2	N					1	-	2	+21.9	64.4	+17.2	-39.0	.438	
		5_2	N					2	-	3	+22.7	62.6	+15.4	-34.8	.431	
		1_4	N'					1	-	2	+21.7	62.1	+14.8	-35.3	.413	
		5_1	N	2b		1			8^{+}	(63	+22.3	61.1	+13.8	-32.5	.412	$^{+}4+3+$
		2_{2-4}	S	3b	1u				26^{+}	167	+25.3	60.9	+13.7	-28.5	.449	$^{+}16+5+3+$
		2_1	S	2b	1u				21^{+}	(104	+24.1	60.4	+13.1	-28.8	.431	$^{+}13+8$
		6	S	$2d^{\times}$		1			6^{+}	45	+23.5	59.7	+12.4	-28.4	.417	$^{\times}{}_{+}7^{+}2+2+$
Nov 20		*3*	*45*	*12*	*2*	*5*	*1*	*8*	*69*	*423*	*{+2.2}*	*{ 47.3}*		*{+19.8}*	*123*	*755*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
324.431	124	p•1_1	Δ N					1	-	4	+38.5	75.7	+40.9	-40.4	.792	
G /1020/	129		◇≠◇ δ	6		4	5	8	31	243	+24.1	60.6	+25.7	-46.2	.551	
		p	*N*	*1*		*1*	*3*	*5*	*8*	*66*	*+22.8*	*61.4*	*+26.6*	*-49.1*	*.548*	
		f	*S*	*5*		*3*	*2*	*3*	*23*	*177*	*+24.6*	*60.3*	*+25.4*	*-45.2*	*.552*	
		1_{31}	N'					1	-	1	+22.6	66.8	+32.0	-53.9	.607	
		1_{32}	N'				1		1	3	+23.5	64.8	+30.0	-51.1	.591	
		1_2	N'					1	-	1	+22.2	64.2	+29.4	-52.4	.575	
			N)					2	-	2	+23.8	62.5	+27.6	-48.5	.568	
		5_2	N				2		2	10	+23.0	62.3	+27.4	-49.6	.559	
		7	N)					1	-	1	+21.2	62.1	+27.3	-52.2	.543	
		5_1	N	1		1			5	48	+22.7	60.8	+26.0	-48.6	.541	
		2_{2-4}	S	1c		1p	2	3	13	71	+25.4	60.7	+25.8	-44.5	.563	
		2_1	S	2d+		1			6	54	+24.2	60.4	+25.5	-45.9	.550	+→6
		6	S	2b		1a			4	52	+24.0	59.5	+24.7	-45.4	.538	
Nov 21		*2*	*28*	*6*		*4*	*5*	*9*	*31*	*247*	*{+2.1}*	*{ 34.9}*		*{+19.5}*	*52*	*410*
325.405	124 ↓	p•1_1	Δ N'					1	-	1	+38.6	74.6	+52.5	-45.6	.870	
G /0943/	129		◇-◇	3		3		3	16	146	+24.8	60.5	+38.5	-55.1	.692	
		p	*N*	*1*		*1*		*1*	*3*	*31*	*+23.1*	*60.6*	*+38.6*	*-57.4*	*.683*	
		f	*S*	*2*		*2*		*2*	*13*	*115*	*+25.2*	*60.5*	*+38.5*	*-54.5*	*.694*	
		7	N'					1	-	1	+21.7	62.2	+40.2	-60.1	.694	
			S					2	-	3	+26.6	61.4	+39.8	-53.3	.711	→7
		2_{2-4}	S	1b		1			10	66	+25.6	60.6	+38.6	-54.1	.697	
		5_1	N	1		1a			3	30	+23.1	60.5	+38.5	-57.3	.683	
		2_1	S	1		1a			3+	46	+24.6	60.4	+38.3	-55.2	.689	+2+
	132 ↑	p•1	▽ (S)					1	1	4	-25.8	65.9	+43.8	-126.2	.775	
Nov 22		*3*	*34*	*3*		*3*	*1*	*4*	*17*	*151*	*{+1.9}*	*{ 22.0}*		*{+19.2}*	*24*	*217*
326.352	129		◇-Δ	4		3		4	21	82	+23.7	61.0	+51.5	-61.8	.815	
K /0827/		*p*	*N*					*3*	-	*7*	*+22.8*	*63.1*	*+53.6*	*-63.4*	*.831*	
		f	*S*	*4*		*3*		*1*	*21*	*75*	*+23.8*	*60.8*	*+51.3*	*-61.7*	*.813*	
			N					1	-	2	+22.4	63.5	+54.0	-64.1	.833	
			N)					1	-	2	+23.8	63.4	+53.8	-62.4	.836	
		7	N					1	-	3	+22.5	62.7	+53.1	-63.7	.827	
		2_1	S	1		1		1×	4	16	+24.2	61.0	+51.4	-61.3	.816	×4→7
		2_{2-4}	S	1b		1			8	18	+25.2	60.9	+51.3	-60.0	.818	
		8	S	2b		1			9	41	+23.0	60.7	+51.2	-62.6	.810	
	132 ↓	p•1	Δ (S)					1	-	7	-26.2	65.5	+56.0	-121.5	.875	
	133 ↑		▽ ◇	1		1	2	1	5	24	+24.6	27.3	+17.8	-35.6	.481	
		p•1	*N*	*1*		*1*	*1×*		*4*	*18*	*+24.2*	*27.8*	*+18.3*	*-36.8*	*.480*	×4←
		f•2	*S*				*1*	*1×*	*1*	*6*	*+25.8*	*25.8*	*+16.3*	*-31.8*	*.482*	×3↑10
Nov 23		*3*	*33*	*5*		*4*	*2*	*6*	*26*	*113*	*{+1.8}*	*{ 9.5}*		*{+18.9}*	*33*	*144*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
ROT No 1662																
327.551	129		◇ ∇	2		2	1	3	6	42	+24.1	60.9	+67.2	-64.6	.932	
G /1313/		*p•7*	*N'*					*1*	-	*2*	*+22.9*	*63.0*	*+69.3*	*-66.2*	*.943*	
		f	*S*	*2*		*2*	*1*	*2*	*6*	*40*	*+24.2*	*60.8*	*+67.1*	*-64.6*	*.932*	
		2_{2-4}	S	1		1		1^{x}	3	12	+24.5	61.1	+67.3	-64.3	.934	$^{x}{}_{4}\rightarrow 5$
		2_1	S	1		1			2	16	+24.0	60.9	+67.2	-64.8	.932	
		8	S				1		1	8	+23.5	60.8	+67.1	-65.3	.931	
			S)					1	-	4	+25.6	59.5	+65.7	-62.9	.925	
	133		Δ ◇	1		1		1	7	43	+24.4	27.9	+34.1	-52.5	.647	
		p•1	*N*	*1*		*1q*			*7*	*42*	*+24.4*	*28.0*	*+34.2*	*-52.6*	*.647*	
		f•2	*S*					*1*	-	*1*	*(+25.9*	*25.6*	*+31.8*	*-48.8*	*.633)*	
Nov 24		*2*	*22*	*3*		*3*	*1*	*4*	*13*	*85*	*{+1.7}*	*{353.7}*		*{+18.5}*	*15*	*96*
328.371	129→	*f•2_{1-4}*	*(∇) S*					*(1)*	*(1)*	*(8)*	+24.7	61.0	+78.1	-65.2	.981	
G /0854/	133	*p•1*	◇ *N*	1b		1			9	41	+24.5	28.1	+45.2	-58.4	.760	
Nov 25		*2*	*21*	*1*		*1*	*1*		*10*	*49*	*{+1.6}*	*{342.9}*		*{+18.2}*	*12*	*56*
329.224	133	*p•1*	◇ *N*	1		1			5	34	+24.5	27.8	+56.2	-62.0	.858	
K /0523/																
Nov 26		*1*	*11*	*1*		*1*			*5*	*34*	*{+1.5}*	*{331.7}*		*{+17.9}*	*5*	*35*
330.242	133→	*p•1*	*(∇) N*					*(1)*	*(1)*	*(12)*	+24.6	(26.1)	+67.8	-64.2	(.937)	
K /0548/																
Nov 27		*1*	*10*					*1*	*1*	*12*	*{+1.3}*	*{318.3}*		*{+17.6}*	*1*	*8*
331.226	134 ↑	*p•1*	◇ *N*	1		1			(6)	(26)	+18.2	248.6	-56.7	+69.2	.851	
K /0525/																
Nov 28		*1*	*11*	*1*		*1*			*6*	*26*	*{+1.2}*	*{305.3}*		*{+17.2}*	*6*	*27*
332.347	134	*p•1*	◇ *N*	1		1			3	17	+18.6	249.4	-41.1	+63.8	.697	
K /0819/																
Nov 29		*1*	*10*	*1*		*1*			*3*	*17*	*{+1.1}*	*{290.5}*		*{+16.8}*	*4*	*24*
333.297	134		Δ≠∇				1	2	1	14	+18.2	251.2	-26.8	+55.1	.524	
K /0707/		*p*	*N*				*1*	*1*	*1*	*11*	*+18.2*	*251.2*	*-26.9*	*+55.0*	*.525*	
		f•4	*S*					*1*	-	*3*	*+18.0*	*251.2*	*-26.8*	*+55.5*	*.523*	
		3	N					1	-	4	+18.0	253.6	-24.5	+53.1	.494	
		1	N				1		1	7	+18.3	249.8	-28.2	+56.1	.542	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	135	p•1	S	1c	1r				46	283	-19.3	202.6	-75.5	+110.1	.974	*
	136			2	2				86	456	-21.8	197.4	-80.6	+112.2	.990	*
		p•1	S	1c	1u				41	(236	-22.2	198.3	-79.7	+112.6	.988	
		f•2	N'	1c	1u				45	(220	-21.4	196.4	-81.6	+111.8	.992	
Nov 30		*3*	*36*	*3*	*3*		*1*	*2*	*133*	*753*	*{+0.9}*	*{278.0}*		*{+16.4}*	*47*	*281*
334.224	134							2	-	8	+19.0	251.6	-14.2	+36.5	.392	
K /0522/		p•(1)	N					1	-	3	+19.5	250.0	-15.8	+38.6	.413	
		f•4	S					1	-	5	+18.7	252.5	-13.3	+35.3	.379	
	135	p	S	1	1			1	42	334	-19.7	202.9	-62.9	+112.3	.907	
		1	S	1c	1q				42	325	-19.7	203.0	-62.8	+112.3	.907	
		1_1	S					1	-	9	-20.1	200.6	-65.2	+112.3	.923	
	136			3	3		1	1	68	434	-22.0	197.7	-68.1	+113.7	.942	
		p•1	S	1c	1q				36	(240	-22.4	198.6	-67.2	+114.3	.937	
		f	N	2	2		1	1	32	194	-21.4	196.5	-69.3	+113.0	.947	
		2_2	N'	1	1				15	(85	-22.0	196.9	-68.9	+113.7	.946	
			(N)				1		1	26	-19.8	196.4	-69.4	+111.3	.946	
		2_1	N	1c	1u				16	(70	-21.4	196.2	-69.6	+112.9	.949	
			N					1	-	13	-20.6	195.9	-69.9	+112.0	.950	
Dec 1		*3*	*42*	*4*	*4*		*1*	*4*	*110*	*776*	*{+0.8}*	*{265.8}*		*{+16.1}*	*81*	*587*
335.224	134							2	-	6	+18.0	254.6	+ 2.0	-6.5	.302	
K /0522/		p•(3)	N					1	-	2	+16.8	257.0	+ 4.4	-14.8	.289	
		f•4	S					1	-	4	+18.6	253.4	+ 0.8	-2.4	.309	
	135	p	S	1	1			1	45	286	-19.6	203.4	-49.2	+115.7	.793	
		1	S	1c	1q				44	275	-19.6	203.5	-49.1	+115.7	.792	
		1_1	S					1	1	11	-19.9	201.4	-51.2	+115.4	.814	
	136			3	2	1	1	1	67	401	-22.1	197.6	-55.0	+116.8	.852	
		p•1	S	1c	1q				40	261	-22.4	198.5	-54.1	+117.4	.846	
		f	N	2	1	1	1	1	27	140	-21.6	196.1	-56.5	+115.8	.864	
		2_2	N	1		1			8	18	-22.7	197.1	-55.5	+117.2	.858	
		2_1	N	1c	1a				18	109	-21.6	195.9	-56.7	+115.7	.865	
			N				1	1×	1	13	-20.4	195.9	-56.7	+114.3	.862	×5↑6
Dec 2		*3*	*46*	*4*	*3*	*1*	*2*	*3*	*112*	*693*	*{+0.7}*	*{252.6}*		*{+15.7}*	*125*	*779*
336.457	134						2	4	2	13	+17.2	250.6	+14.3	-39.3	.373	
G /1059/		p	N				2	2	2	11	+17.4	250.9	+14.5	-39.4	.379	
		f	S					2	-	2	+16.1	249.2	+12.9	-38.5	.345	
		5	N				2		2	9	+17.4	251.2	+14.8	-40.1	.381	→5
		6	S					1	-	1	+16.4	250.3	+13.9	-40.2	.359	
		(7_1)	N					1	-	1	+18.1	249.8	+13.4	-36.1	.376	
		(7_2)	N					1	-	1	+17.2	249.4	+13.0	-36.9	.360	
		(8_1)	S					1	-	1	+15.8	248.1	+11.8	-36.7	.331	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	135	*p*	¤ *S*	2	1	1	1	3	32	197	-19.2	204.5	-31.9	+124.1	.604	
		1	S	1c	1r				29	181	-19.2	204.7	-31.7	+124.2	.602	
			S					1	-	1	-17.7	204.1	-32.3	+121.6	.599	
			S				1		1	2	-18.6	203.0	-33.3	+122.1	.617	
		1_1	S	1		1		1×	2	11	-19.4	202.7	-33.6	+123.0	.625	×↑
		1_2	(S)					1	-	2	-20.8	201.2	-35.2	+123.9	.651	
	136		◇-◙	4	1	1	1	5	47	324	-22.3	198.1	-38.2	+124.0	.694	
		p•1	*S*	*1c*	*1r*				*33*	*240*	*-22.5*	*198.8*	*-37.5*	*+124.6*	*.687*	
		f	*N*	*3*		*1*	*1*	*5*	*14*	*84*	*-21.8*	*195.9*	*-40.4*	*+122.1*	*.713*	
		2_{11}	N					1	-	2	-22.3	196.6	-39.7	+123.1	.708	
		2_1	N	3t+		1		1×	13	72	-21.7	195.9	-40.4	+122.0	.713	+↑8 $×_2$↓
			N)					3	-	5	-20.6	196.4	-40.0	+120.8	.702	
		2_2	N				1		1	5	-23.6	195.8	-40.6	+124.4	.725	
	137↑		◇ △	1		1		1	6	13	+16.2	287.7	+51.3	-69.9	.801	
		p•1	*N*					*1*	-	*2*	*+15.3*	*290.0*	*+53.7*	*-71.6*	*.821*	
		f•2	*S*	*1*		*1*			*6*	*11*	*+16.4*	*287.3*	*+50.9*	*-69.6*	*.797*	
Dec 3		*4*	*56*	*7*	*2*	*3*	*4*	*13*	*87*	*547*	*{+0.5}*	*{236.4}*		*{+15.2}*	*130*	*820*
337.416	134		◇ ◇	3		3	1	1	14	56	+16.7	251.5	+27.7	-57.7	.528	
G /0959/		*p•5*	*N*	*2*		*2*			*8*	*31*	*+17.5*	*252.3*	*+28.5*	*-57.1*	*.545*	*↑5*
		f•6	*S*	*1b*		*1*	*1+*	*1×*	*6*	*25*	*+15.7*	*250.4*	*+26.7*	*-58.5*	*.508*	*+4→7 ×2→6*
	135	*p*	◙ *S*	2	1		1	1	37	216	-19.3	204.9	-18.8	+137.9	.456	
		1	S	2b	1r				36+	206	-19.3	205.0	-18.7	+138.0	.455	+27+9
		1_1	S				1		1	7	-19.2	202.5	-21.2	+134.5	.481	
		1_2	S					1	-	3	-20.9	202.4	-21.3	+136.9	.500	
	136		◇-◙	2	1	1	1	2	53	292	-22.4	197.9	-25.9	+133.9	.562	
		p•1	*S*	*1c*	*1r*				*45*	*236*	*-22.5*	*198.4*	*-25.4*	*+134.5*	*.557*	
		f	*N*	*1*		*1*	*1*	*2*	*8*	*56*	*-22.2*	*195.6*	*-28.1*	*+131.3*	*.583*	
		2_3	N'					1	-	1	-20.4	197.1	-26.6	+130.2	.552	
		2_{11}	N'					1	-	6	-22.7	196.2	-27.2	+132.6	.582	
		2_1	N	1b+		1			7	41	-21.8	195.6	-28.1	+130.7	.580	+≈3t
		2_2	N				1		1	8	-24.2	195.1	-28.7	+133.5	.605	
	137		◇-△	1		1		3	6	50	+16.5	287.2	+63.5	-71.9	.905	
		p	*N*					*2*	-	*10*	*+15.1*	*287.7*	*+64.0*	*-73.4*	*.906*	
		f•2	*S*	*1*		*1*		*1×*	*6*	*40*	*+16.9*	*287.1*	*+63.4*	*-71.5*	*.905*	*×8→11*
		1	N					1	-	2	+15.2	290.0	+66.3	-73.6	.923	
			N					1	-	8	+15.1	287.1	+63.4	-73.4	.902	
	138↑		▽-◇	1		1	2	1	4	12	+16.4	225.8	+ 2.1	-7.2	.278	
		p•1	*N*	*1*		*1*			*2*	*7*	*+16.3*	*226.4*	*+ 2.7*	*-9.4*	*.278*	
		f	*S*				*2*	*1*	*2*	*5*	*+16.4*	*224.9*	*+ 1.2*	*-4.0*	*.278*	
		2_1	S				1		1	2	+15.8	225.2	+ 1.5	-5.4	.268	
		2_3	S					1	-	1	+17.3	224.9	+ 1.2	-3.8	.292	
		2_2	S				1		1	2	+16.6	224.5	+ 0.8	-2.8	.280	
Dec 4		*5*	*71*	*9*	*2*	*6*	*5*	*8*	*114*	*626*	*{+0.4}*	*{223.7}*		*{+14.8}*	*190*	*1028*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF SPOTS s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
338.430	134		◇-◇	5		4	1	7	15	75	+16.7	251.5	+41.2	-65.8	.693	
G /1019/		*p*	*N*	*3*		*3*	*1*	*3*	*9*	*38*	*+17.5*	*252.2*	*+41.9*	*-64.9*	*.706*	
		f	*S*	*2*		*1*		*4*	*6*	*37*	*+15.9*	*250.7*	*+40.4*	*-66.7*	*.681*	
		5	N	1		1		1×	3	19	+17.3	253.1	+42.8	-65.5	.715	×2←
		7_1	N	2		2	1×		6	15	+17.6	251.8	+41.4	-64.6	.701	→7↑8sys
			(S)					2	-	3	+16.9	251.8	+41.4	-65.7	.697	×3
		6	S	2		1n			6+	31	+15.7	250.8	+40.5	-66.9	.681	+3+2+
		7_2	N'					2	-	4	+18.2	249.7	+39.3	-63.0	.679	→7↑5
		8_2	(S)					1	-	1	+17.3	249.1	+38.7	-63.8	.668	
		8_1	S'					1	-	2	+16.0	249.0	+38.7	-65.7	.662	
	135		▽≠⌑	δ 2	1		2	9	30	223	-18.8	205.5	- 4.9	+166.2	.339	
		p	*S*	*2*	*1*		*1*	*3*	*29*	*213*	*-18.9*	*205.6*	*- 4.8*	*+166.5*	*.339*	
		f	*N*				*1*	*6*	*1*	*10*	*-18.0*	*203.2*	*- 7.1*	*+159.5*	*.338*	
			S)					1	-	1	-16.7	206.5	- 3.9	+167.5	.300	
		3_1	S				1	1×	1	6	-17.7	205.9	- 4.4	+166.5	.319	×3↓5
		1	S	2b	1p				28+	205	-18.9	205.6	- 4.8	+166.5	.340	+26+2
		4_3	N					1	-	1	-17.5	205.1	- 5.3	+164.0	.319	
		4_1	N				1	1	1	4	-17.9	204.1	- 6.3	+161.6	.331	
			N)					1	-	1	-18.2	203.2	- 7.2	+159.5	.340	
		1_1	S'					1	-	1	-19.0	202.4	- 8.0	+158.4	.354	
		4_2	N					3	-	4	-18.2	201.9	- 8.4	+156.3	.348	→8
	136		◇ ◙	2	1	1	1	3	40	228	-22.0	198.0	-12.4	+152.3	.430	
		p•1	*S*	*1c*	*1r*				*36*	*192*	*-22.1*	*198.4*	*-12.0*	*+153.2*	*.428*	
		f	*N*	*1*		*1*	*1*	*3*	*4*	*36*	*-21.4*	*195.7*	*-14.7*	*+147.5*	*.440*	
		2_3	N				1		1	4	-20.3	196.5	-13.9	+147.4	.420	
		2_1	N	1b		1		2×	3	31	-21.5	195.7	-14.7	+147.6	.442	×↑
			N)					1	-	1	-21.5	194.1	-16.3	+144.6	.455	
	137 →	*f•2*	△ *S*					1	-	3	+16.2	285.9	+75.6	-73.4	.972	
	138		◇-◇	2		2	3	6	10	53	+17.0	225.7	+15.4	-41.2	.386	
		p	*N*	*1*		*1*	*1*		*6*	*23*	*+16.7*	*227.1*	*+16.8*	*-44.3*	*.398*	
		f	*S*	*1*		*1*	*2*	*6*	*4*	*30*	*+17.3*	*224.7*	*+14.3*	*-38.8*	*.378*	
		1	N	1		1			5	17	+16.4	227.3	+17.0	-45.2	.396	
		1_0	N				1		1	6	+17.6	226.6	+16.3	-41.8	.402	
			S)					1	-	1	+17.8	225.7	+15.3	-39.9	.394	
		2_1	S	1		1	1+	1×	3	8	+16.9	225.2	+14.8	-40.1	.378	→7syx
		2_4	S					1	-	4	+17.4	225.0	+14.6	-39.2	.382	+2×2
		2_2	S				1		1	11	+17.2	224.5	+14.2	-38.8	.376	
			S					1	-	2	+17.0	223.9	+13.6	-37.9	.366	
		2_3	S					2	-	4	+18.1	223.9	+13.5	-35.9	.380	
	139 ↑	*f•*	◇ *N*	1		1			2	12	-27.2	187.6	-22.7	+143.3	.577	
	140 ↑		△-△					4	-	6	-26.5	133.6	-76.8	+117.1	.979	*
		p	*S*					*2*	-	*3*	*-26.2*	*136.0*	*-74.3*	*+117.1*	*.972*	
		f	*N*					*2*	-	*3*	*-26.7*	*131.2*	*-79.2*	*+117.1*	*.986*	
		1_2	S'					1	-	2	-25.8	136.8	-73.6	+116.8	.969	
		1_1	S'					1	-	1	-27.0	134.5	-75.8	+117.8	.977	
		2_2	N'					1	-	1	-25.9	134.0	-76.3	+116.6	.979	
		2_{11}	N'					1	-	2	-27.1	129.8	-80.6	+117.4	.990	
Dec 5		*7*	*91*	*12*	*2*	*8*	*7*	*30*	*97*	*600*	*{+0.3}*	*{210.4}*		*{+14.4}*	*172*	*1060*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
339.460	134		⧗⧓⧗ δ	3	2		2	5	37	227	+16.4	252.0	+55.2	-70.4	.838	
G /1102/		*p*	*N*	*1*	*1*		*1*	*4*	*20*	*114*	*+17.2*	*252.6*	*+55.8*	*-69.6*	*.845*	
		f	*S*	*2*	*1*		*1*	*1*	*17*	*113*	*+15.5*	*251.4*	*+54.6*	*-71.2*	*.832*	
		5	N'				1		1	6	+16.9	253.5	+56.8	-70.2	.853	
			N)					1	-	1	+18.2	252.8	+56.0	-68.5	.849	
		7_1	N]		1b	1u			19	(102]	+17.2	252.6	+55.8	-69.6	.845	
		6	S]		2b	1u			16+	(102]	+15.5	251.5	+54.7	-71.3	.833	+8+8
			N)					2	-	2	+17.4	251.1	+54.3	-69.0	.832	
		8_1	S				1		1	10	+15.9	250.4	+53.6	-70.7	.823	
		7_2	N					1	-	3	+18.2	249.9	+53.1	-67.7	.823	
		8_2	(S)					1	-	1	+16.8	249.0	+52.2	-69.2	.811	
	135		▽-⧓	3	1	1	1	5	41	254	-19.0	206.2	+ 9.4	-154.8	.365	
		p	*S*	*3*	*1*	*1*		*1*	*40*	*246*	*-19.0*	*206.3*	*+ 9.5*	*-154.6*	*.366*	
		f	*N*				*1*	*4*	*1*	*8*	*-18.4*	*203.6*	*+ 6.8*	*-160.5*	*.339*	
		3_2	S	1		1			3	25	-18.2	207.9	+11.2	-149.7	.366	
		1	S	2b	1q				37+	220	-19.1	206.1	+ 9.3	-155.2	.366	+33+4
		3_1	S'					1	-	1	-17.0	205.7	+ 8.9	-153.3	.332	
		4_3	N					1	-	2	-17.3	204.8	+ 8.0	-156.1	.330	
		4_1	N				1	1	1	3	-18.5	203.7	+ 6.9	-160.4	.340	
		4_2	N					2	-	3	-19.0	202.7	+ 5.9	-163.6	.344	
	136		▽ ⧓	1	1		3	2	38	230	-21.8	198.1	+ 1.3	-176.9	.375	
		p•1	*S*	*1b*	*1r*				*35*	*214*	*-21.8*	*198.3*	*+ 1.5*	*-176.4*	*.376*	
		f	*N*				*3*	*2*	*3*	*16*	*-21.3*	*195.3*	*- 1.5*	*+176.2*	*.368*	
		2_1	N				3		3	14	-21.3	195.4	- 1.4	+176.5	.368	↑6
		2_3	N'					1	-	1	-20.0	195.4	- 1.4	+176.2	.347	
		2_4	N'					1	-	1	-22.3	193.5	- 3.3	+172.0	.387	
	138		▽ ◇	1		1	1	2	6	24	+16.8	227.1	+30.3	-59.4	.563	
		p	*N*	*1*		*1*		*1*	*5*	*18*	*+16.7*	*227.9*	*+31.1*	*-60.1*	*.573*	
		f	*S*				*1*	*1*	*1*	*6*	*+16.8*	*224.6*	*+27.8*	*-57.3*	*.533*	
		1	N	1		1			5	17	+16.7	227.9	+31.1	-60.2	.573	
		1_0	N					1	-	1	+17.4	227.3	+30.6	-58.6	.571	
		2_4	S				1		1	4	+17.0	224.6	+27.8	-57.0	.534	
		2_1	S'					1	-	2	+16.5	224.6	+27.9	-57.8	.531	
	139	↓ *f•*	▽ *N)*				1		1	6	-26.0	187.4	- 9.4	+161.6	.467	
	140		◇-▽	1		1	3	5	7	51	-26.2	133.5	-63.3	+119.0	.916	
		p	*S*				*2*	*4*	*2*	*16*	*-26.4*	*135.9*	*-60.9*	*+119.6*	*.903*	
		f	*N*	*1*		*1*	*1*	*1*	*5*	*35*	*-26.2*	*132.5*	*-64.3*	*+118.7*	*.923*	
		1_2	S'					1	-	2	-25.8	138.3	-58.5	+119.6	.885	
		1_3	S				1		1	3	-25.9	135.7	-61.1	+119.1	.903	
		1_4	S					1	-	1	-26.9	135.7	-61.1	+120.1	.905	
		1_1	S				1	1	1	9	-26.5	135.6	-61.2	+119.7	.905	
		1_5	S					1	-	1	-27.2	134.0	-62.8	+120.1	.916	
		2_2	N	1b		1			4	27	-25.8	133.8	-63.0	+118.5	.915	
		2_{11}	N					1	-	2	-26.8	129.5	-67.3	+118.8	.941	
		2_{12}	N				1		1	6	-27.6	127.6	-69.2	+119.3	.951	
Dec 6		*6*	*85*	*9*	*4*	*3*	*11*	*19*	*130*	*792*	*{+0.2}*	*{196.8}*		*{+14.0}*		*204 1238*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
340.224	134		⊐##◧	δ 4	2	1		2	74	431	+16.4	252.2	+65.5	-72.1	.919	
K /0523/		*p*	*N*	*2*	*1*	*1*			*46*	*233*	*+17.1*	*252.7*	*+66.0*	*-71.4*	*.922*	
		f	*S*	*2*	*1*			*2*	*28*	*198*	*+15.6*	*251.7*	*+65.0*	*-72.9*	*.915*	
		7_1	N	1b	1u				39	(200	+16.9	253.3	+66.6	-71.7	.926	
		6	S	2b	1u				28	(185	+15.6	251.8	+65.1	-72.9	.916	
		8_1	S'					1	-	10	+16.0	250.7	+64.0	-72.3	.908	
		7_2	N	1		1			7	33	+18.0	249.1	+62.4	-69.9	.899	
		8_2	(S)					1	-	3	+16.4	249.0	+62.3	-71.7	.897	
	135		◇ ◧	3	1	1	1		43	266	-19.2	206.0	+19.3	-136.7	.457	
		p	*S*	*2*	*1*		*1*		*36*	*231*	*-19.3*	*206.4*	*+19.7*	*-136.2*	*.461*	
		f•4_{12}	*N*	*1*		*1*			*7*	*35*	*-18.9*	*203.5*	*+16.8*	*-139.9*	*.426*	
		3_2	S				1		1	21	-18.1	207.9	+21.2	-132.2	.466	
		1	S	2b	1p				35+	210	-19.4	206.2	+19.5	-136.6	.461	+33+2
	136		△ ◧	1	1			2	40	204	-22.0	198.1	+11.4	-154.0	.418	
		*p•*1	*S*	*1c*	*1r*				*40*	*201*	*-22.0*	*198.1*	*+11.4*	*-153.9*	*.419*	
		f	*N*					*2*	*-*	*3*	*-20.7*	*194.7*	*+ 8.0*	*-159.7*	*.379*	
		2_3	N					1	-	2	-20.2	195.2	+ 8.5	-158.1	.374	
		2_4	N					1	-	1	-21.6	193.7	+ 7.0	-162.9	.388	
	138 +	*p•*1	◇ *N*	1		1			4	15	+17.1	228.4	+41.7	-65.3	.702	
	140		◇-◇	4		4	1	3	33	206	-26.0	134.5	-52.2	+121.8	.836	
		p	*S*	*2*		*2*	*1*		*20*	*125*	*-25.9*	*136.7*	*-50.0*	*+122.4*	*.818*	
		f	*N*	*2*		*2*		*3*	*13*	*81*	*-26.3*	*131.2*	*-55.6*	*+121.0*	*.864*	
		1_4	S	1		1			5	30	-26.1	137.5	-49.2	+123.0	.813	
		1_{1-3}	S	1		1			14	80	-25.7	136.7	-50.1	+122.1	.818	
		1_5	S				1		1	15	-26.4	135.3	-51.4	+122.5	.832	
		2_3	N					2	-	14	-25.2	132.8	-53.9	+120.3	.849	→14
		2_2	N	1		1			6	38	-26.3	132.4	-54.4	+121.4	.855	
		2_{11}	N	1		1			7	25	-26.7	128.9	-57.9	+120.7	.882	
		2_{12}	N					1	-	4	-27.6	128.0	-58.7	+121.5	.890	
Dec 7		*5*	*79*	*13*	*4*	*7*	*2*	*7*	*194*	*1122*	*{+0.1}*	*{186.7}*		*{+13.7}*	*249*	*1430*
341.229	134 →		(⊐-⊐)	3	2	1			9	370	+16.6	253.3	+79.8	-73.1	.986	
K /0530/		*p*	*N*	*2*	*1*	*1*			*9*	*221*	*+17.2*	*253.3*	*+79.8*	*-72.6*	*.986*	
		*f•*6	*S'*	*(1)*	*(1)*				*(-)*	*(149)*	*+15.8*	*253.3*	*+79.9*	*-74.0*	*.986*	
		7_1	N'	1	(1)				(9)	(194)	+17.2	253.9	+80.4	-72.6	.988	
		7_2	N'	(1)		(1)			(-)	27	+17.1	248.8	+75.4	-72.3	.972	
	135		◇-◧	2	1	1	1	2	36	238	-19.5	205.8	+32.3	-123.4	.605	
		p	*S*	*1*	*1*		*1*	*1*	*33*	*223*	*-19.5*	*205.9*	*+32.4*	*-123.4*	*.607*	
		f	*N*	*1*		*1*		*1*	*3*	*15*	*-18.7*	*203.7*	*+30.2*	*-123.8*	*.576*	
		3_2	S					1	-	2	-17.9	207.5	+34.0	-119.9	.617	
		1	S	1c	1a				32	212	-19.6	205.9	+32.4	-123.5	.608	
		(3_1)	S				1		1	9	-18.1	205.3	+31.9	-121.6	.592	
		(4_3)	N					1	-	5	-17.8	204.2	+30.7	-122.1	.576	
		4_{12}	N	1		1			3	10	-19.1	203.4	+30.0	-124.6	.576	
	136		△ ◧	1	1			3	33	223	-22.1	198.0	+24.6	-134.3	.540	
		p	*S*	*1*	*1*			*1*	*33*	*217*	*-22.1*	*198.1*	*+24.7*	*-134.2*	*.541*	
		f•2_4	*N*					*2*	*-*	*6*	*-21.7*	*193.7*	*+20.3*	*-138.9*	*.492*	*→7↑5*

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	s	FO y	SPOTS x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		(S)						1	-	2	-20.3	199.1	+25.6	-130.5	.535	
		1	S	1c	1r				33	215	-22.1	198.1	+24.7	-134.2	.541	
	140	◇-✖		5	1	4	1	3	65	344	-26.4	135.0	-38.5	+128.7	.714	
		p	*S*	*2*	*1*	*1*		*1*	*42*	*215*	*-26.2*	*137.8*	*-35.6*	*+130.2*	*.686*	
		f	*N*	*3*		*3*	*1*	*2*	*23*	*129*	*-26.6*	*130.3*	*-43.2*	*+126.2*	*.760*	
		1_{1-5} S		1c	1a				35	173	-26.3	138.3	-35.1	+130.6	.682	
		1_6 S						1	-	3	-26.7	136.2	-37.2	+129.7	.705	
		1_7 S		1		1			7	39	-25.9	135.8	-37.7	+128.4	.704	
		2_2 N		1b		1			13	68	-26.5	131.4	-42.1	+126.6	.750	
		2_3 N		1		1	1×		6	35	-26.2	130.5	-43.0	+125.8	.756	×9→16
		2_{11} N		1		1			4	19	-27.3	127.2	-46.3	+125.5	.791	
		2_{12} N'						2	-	7	-27.7	126.3	-47.2	+125.5	.800	↑5
Dec 8		*4*	*67*	*11*	*5*	*6*	*2*	*8*	*143*	*1175*	*{-0.1}*	*{173.5}*		*{+13.2}*	*207*	*1357*
342.251	135	◇ ¤		2	1	1			28	205	-19.7	205.7	+45.7	-116.4	.754	
K /0602/		*p•1*	*S*	*1c*	*1r*				*26*	*190*	*-19.8*	*205.8*	*+45.8*	*-116.5*	*.756*	
		f•4_{12}	*N'*	*1*		*1*			*2*	*15*	*-18.6*	*203.8*	*+43.8*	*-115.7*	*.731*	
	136	△ ¤		1	1			1	28	199	-22.2	198.1	+38.1	-123.4	.686	
		p•1	*S*	*1c*	*1r*				*28*	*196*	*-22.2*	*198.2*	*+38.2*	*-123.3*	*.687*	
		f•	*N)*					*1*	-	*3*	*-24.9*	*192.0*	*+32.0*	*-131.0*	*.639*	
	140	◇‡¤	δ	10	1	9	2	7	52	393	-26.1	135.2	-24.8	+139.8	.580	
		p	*S*	*3*	*1*	*2*		*5*	*28*	*222*	*-25.8*	*138.7*	*-21.3*	*+143.0*	*.544*	
		f	*N*	*7*		*7*	*2*	*2*	*24*	*171*	*-26.6*	*130.7*	*-29.3*	*+135.5*	*.627*	
		1_{1-5} S		1c	1p				20	129	-25.6	140.5	-19.5	+144.9	.526	
		1_6 S		1b+		1		3×	6	46	-25.4	139.0	-21.0	+142.8	.537	+≈4t→14
		S						1	-	7	-24.5	138.1	-21.9	+140.4	.536	×14
		1_7 S'						1	-	7	-25.6	137.1	-22.9	+140.8	.556	
		8 N					1		1	18	-26.0	133.9	-26.1	+137.7	.590	
		6 N		1		1			2	12	-27.8	132.4	-27.7	+138.5	.622	
		3 S		1		1			2	33	-27.2	131.8	-28.2	+137.2	.621	
		2_5 N		2b		2			6+	31	-25.7	131.8	-28.2	+135.4	.609	+4+2
		2_2 N'		1		1	1×		3	33	-26.3	130.5	-29.5	+134.8	.626	×16→5
		2_4 N		1		1a			4	33	-27.1	129.6	-30.4	+135.1	.641	
		2_3 N		1		1		1×	2	22	-25.6	129.4	-30.6	+133.2	.631	×7→8
		4_1 N		1		1			6	20	-28.8	129.2	-30.8	+136.9	.658	
		(2_1) N'						1	-	2	-27.0	126.8	-33.2	+132.7	.667	
	141 ↑	◇ ◇		2		2			4	21	-16.9	190.6	+30.6	-120.6	.567	
		p•1	*S'*	*1*		*1*			*2*	*8*	*-17.0*	*191.8*	*+31.8*	*-119.9*	*.584*	
		f•2	*N*	*1*		*1*			*2*	*13*	*-16.8*	*189.8*	*+29.8*	*-121.1*	*.557*	
	142 ⊢	(▽)◇		1		1	2		11	128	+24.9	92.2	-67.8	+63.3	.942	
		p•1	*N*	*1*		*1*	*1×*		*11*	*88*	*+24.6*	*93.5*	*-66.5*	*+63.4*	*.935*	×22→6↑9
		f•2	*S'*				*(1)*		*(-)*	*40*	*+25.5*	*89.4*	*-70.6*	*+63.1*	*.956*	
Dec 9		*5*	*76*	*16*	*3*	*13*	*4*	*8*	*123*	*946*	*{-0.2}*	*{160.0}*		*{+12.8}*	*176*	*1318*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
343.224 K /0522/	135	p•1	⌅	S	lc	lr			(30)	210	-20.0	206.1	+58.9	-112.8	.875	
	136	p•1	⌅	S	lc	lr			29	197	-22.2	198.6	+51.4	-117.3	.817	
	140		◇≠✖	δ	9	1	6	3	3	117	1015	-26.7	133.6	-13.6	+155.6	.497	*
		p		S	3	1	2	3	2	70	492	-25.7	138.2	- 9.0	+162.4	.457	
		f		N	6		4		1	47	523	-27.6	129.3	-17.9	+149.2	.535	
		1_{1-6}	S		lc	lp				54	276	-25.5	141.6	- 5.6	+168.3	.437	
			S					2		2	36	-23.4	138.6	- 8.6	+160.8	.417	→8
		1_7	S						1	(-)	(20)	-25.9	138.4	- 8.8	+162.3	.455	
			S					1		1	21	-24.3	136.4	-10.8	+157.3	.442	
		7	S'						1	-	2	-26.3	135.8	-11.4	+158.0	.474	
		5	S]		1		1			4	(45]	-26.8	133.2	-14.0	+154.2	.497	
		8	N]		1		1			8	(40]	-25.7	133.1	-14.1	+152.9	.484	
		6	N]		1		1			12	(90]	-27.6	131.7	-15.5	+152.6	.518	
		3	S]		1		1			9	(92]	-27.1	130.8	-16.4	+150.8	.518	
		2_{2-5}	N		3		1			14	253	-26.7	128.6	-18.6	+147.3	.530	
		4_{12}	N		1		1			13	137	-29.7	127.8	-19.4	+149.5	.571	
			N)						1	-	3	-25.8	126.0	-21.2	+142.9	.543	
	141		◇ ◇		2		2			10	82	-17.1	191.4	+44.3	-113.6	.729	
		p•1		S	1		1			6	39	-17.3	193.7	+46.5	-113.0	.754	
		f•2		N	1		1			4	43	-17.0	189.4	+42.3	-114.1	.707	
	142		◇ ⌅		2	1	1			29	285	+24.4	92.8	-54.4	+60.6	.851	
		p•1		N	1	1				27	(231)	+24.3	93.7	-53.5	+60.5	.844	
		f•2		S	1		1			(2)	54	+25.0	88.8	-58.4	+61.2	.883	
	143 ↑	p	▽	N				1	1	1	28	+ 0.9	159.8	+12.6	-84.8	.220	*
		1	N'						1	-	10	+ 1.7	160.2	+13.0	-81.2	.228	
			N)					1		1	18	+ 0.4	159.5	+12.3	-86.8	.215	
	144 ↓	p•1	△	S					1	-	(15)	-22.2	69.5	-77.7	+112.6	.981	
Dec 10		*7*	*123*		*15*	*4*	*9*	*4*	*5*	*216*	*1832*	*{-0.3}*	*{147.2}*		*{+12.4}*	*313*	*2659*
344.397 G /0932/	135	p•1	⌅	S	lb	lr				20	166	-19.7	205.2	+73.5	-110.4	.964	
	136	p•1	⌅	S	lc	lr				25	191	-21.9	198.3	+66.6	-113.5	.930	
	140		◇≠✖	δ	14	1	10	5	8	101	640	-26.4	134.8	+ 3.1	-173.3	.453	
		p		S	8	1	4		4	70	343	-25.4	139.9	+ 8.2	-163.0	.447	
		f		N	6		6	5	4	31	297	-27.5	129.0	- 2.8	+174.8	.460	×→16
		1_{1-6}	S		4t×1q					48+	233	-24.9	142.5	+10.8	-157.7	.449	+25+14+
			S						1	-	3	-24.4	140.1	+ 8.4	-161.8	.429	+7+2
		1_7	S		1		1			3	16	-25.2	140.1	+ 8.3	-162.6	.440	
			S)						1	-	1	-23.7	139.2	+ 7.5	-163.1	.414	
			S)						1	-	3	-24.7	138.7	+ 7.0	-165.0	.427	
		7	S						1	-	1	-25.2	136.4	+ 4.7	-170.0	.427	
			S		1		1			2	6	-25.6	135.4	+ 3.7	-172.3	.431	
		5	S]		1		1			13	(60]	-26.8	133.4	+ 1.7	-176.6	.446	
		8	N']		1		1			5	(53]	-26.4	132.8	+ 1.1	-177.7	.439	
		6	N]		1		1a	2×		5	45	-27.7	131.6	- 0.1	+179.8	.459	×9←
		3	S]		1		1			4	20	-26.7	131.0	- 0.8	+178.4	.444	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER U	m	OF s	SPOTS y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		2_5	N	1		1		1×	4	26	-26.1	128.1	- 3.6	+172.5	.438	×→
		2_{2-4}	N	1		1a	3+	3×	7	90	-27.2	127.6	- 4.1	+171.9	.457	+31↓×6↓
		4_1	N	1		1			3	41	-29.4	127.2	- 4.5	+172.0	.490	
		4_2	N	1		1			7	42	-28.5	126.4	- 5.4	+170.1	.480	
	141		◇ ∇	1		1	1	3	3	16	-17.2	190.6	+58.9	-109.6	.870	
		p	*S*				*1*	*2*	*1*	*5*	*-16.8*	*192.7*	*+61.0*	*-108.9*	*.886*	
		f•2	*N*	*1*		*1*		*1×*	*2*	*11*	*-17.3*	*189.7*	*+58.0*	*-109.9*	*.863*	×3←
		1	S'				1	1	1	3	-17.2	193.3	+61.6	-109.2	.891	
			S					1	-	2	-16.3	191.8	+60.1	-108.4	.879	
	142		◇ ⌘	2	1	1	3	3	33	215	+24.1	92.4	-39.3	+54.3	.714	
		p•1	*N*	*1b*	*1q*				*25*	*169*	*+23.9*	*93.6*	*-38.1*	*+53.9*	*.701*	
		f	*S*	*1*		*1*	*3*	*3*	*8*	*46*	*+25.0*	*88.0*	*-43.8*	*+55.7*	*.761*	
		2_1	S	1		1a	1+	3×	6	32	+25.4	88.1	-43.7	+55.2	.762	+4→6 ×↓
		2_2	S				2		2	14	+24.2	87.8	-43.9	+56.7	.759	†6
	143↓		Δ-Δ					3	-	3	+ 1.9	158.8	+27.1	-84.8	.458	
		p	*N*					*2*	-	*2*	*+ 1.7*	*159.5*	*+27.8*	*-85.5*	*.469*	
		f•	*S*					*1*	-	*1*	*+ 2.4*	*157.5*	*+25.7*	*-83.6*	*.438*	
		1	N					1	-	1	+ 1.8	160.3	+28.5	-85.4	.481	
			N					1	-	1	+ 1.6	158.7	+27.0	-85.5	.456	
	144	*p*•1	◇ *S*	1		1		1×	3	24	-22.3	71.4	-60.4	+115.1	.889	×4↓
	145→	*p*•1	◇ *N*	1		1			2	17	+14.9	51.3	-80.5	+74.8	.988	
Dec 11		*8*	*114*	*21*	*4*	*14*	*9*	*18*	*187*	*1272*	*{-0.5}*	*{131.7}*		*{+11.9}*	*262*	*1719*
345.418 G /1002/	135→	*p*•1	(⌘) *S*	(1)	(1)				(-)	(8)	(-19.8	204.4	+86.1	-109.8	.998)	
	136→	*p*•1	▣ *S*	1c	1q				41	183	-21.9	198.0	+79.7	-112.1	.986	
	140		⌘+▣ δ	17	2	7	4	10	86	400	-25.7	137.3	+19.1	-145.9	.525	
		p	*S*	*9*	*1*	*4*	*4*		*56*	*283*	*-25.1*	*140.5*	*+22.2*	*-140.8*	*.543*	
		f	*N*	*8*	*1*	*3*		*10*	*30*	*117*	*-27.0*	*129.6*	*+11.4*	*-158.3*	*.482*	×→16
		1_{1-7}	S	4t×	1q				40+	209	-24.8	142.6	+24.3	-137.7	.558	+17+10+
			S	1		1			3	7	-25.0	140.2	+21.9	-140.7	.537	+7+5+
			S				1		1	6	-25.0	138.9	+20.6	-142.3	.524	
		7	S	1		1			2	5	-24.8	137.2	+18.9	-144.4	.507	
			N					1	-	2	-26.0	136.5	+18.3	-146.8	.516	
			S	2b		1			4	7	-25.0	135.5	+17.2	-147.0	.494	
		5	S	1		1	1×		4	41	-26.6	133.4	+15.2	-151.9	.499	×15←5
		8	N	2		1			8+	52	-25.9	132.1	+13.9	-153.2	.481	+5+3
		3	S				2		2	8	-26.4	131.0	+12.7	-155.6	.479	
		6	N	1		1			3	11	-27.3	130.9	+12.6	-156.6	.491	
			N					1	-	1	-29.0	128.9	+10.6	-161.4	.504	
			N					3	-	3	-27.4	127.8	+ 9.5	-161.9	.477	†7
		2_5	N	1		1			2	7	-26.2	127.6	+ 9.4	-161.4	.458	
			N					1	-	3	-29.3	127.1	+ 8.8	-164.4	.500	
		4_{12}	N	4d	1n				17	33	-28.4	126.3	+ 8.1	-165.2	.484	
			N					4	-	5	-27.5	126.3	+ 8.0	-164.5	.466	→10†10
	141→	*f*•2	◇ *N*	1		1		2×	3	16	-17.6	189.6	+71.4	-108.3	.953	×6↑

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	142	◇-Ж		3	1	1		3	18	150	+24.2	92.3	-26.0	+43.5	.581	
		p•1	*N*	*2b*	*1q*				*16+*	*133*	*+24.1*	*92.9*	*-25.4*	*+43.1*	*.574*	*+13+2+*
		f	*S*	*1*		*1*		*3*	*2*	*17*	*+25.3*	*87.6*	*-30.7*	*+46.7*	*.637*	
			S					1	-	2	+25.2	89.7	-28.6	+44.9	.616	
		2_2	S					2	-	2	+24.6	88.2	-30.1	+47.0	.625	→6
		2_1	S	1		1			2	13	+25.4	87.2	-31.1	+46.9	.642	
	144	Δ-◇		1		1		2	3	14	-21.5	70.0	-48.3	+117.5	.785	
		p•1	*S*	*1*		*1*			*3*	*10*	*-22.1*	*71.0*	*-47.3*	*+118.5*	*.777*	
		f	*N*					*2*	-	*4*	*-20.1*	*67.5*	*-50.7*	*+114.9*	*.804*	
			N)					1	-	1	-20.9	69.1	-49.1	+116.4	.791	
			N)					1	-	3	-19.8	67.0	-51.2	+114.4	.808	
	145	*p*•1	◇ *N*	1		1			4	15	+14.8	51.7	-66.6	+73.7	.926	
	146	*p*•1	Δ *N*					1	-	6	+15.6	45.5	-72.8	+73.5	.961	
Dec 12		*8*	*101*	*25*	*5*	*11*	*4*	*18*	*155*	*792*	*{-0.6}*	*{118.3}*		*{+11.4}*	*198*	*1028*
346.248	140	◇≠Ж	δ	5	1	3	3	3	43	291	-25.6	138.6	+31.3	-132.9	.636	
K /0557/		*p*	*S*	*3*	*1*	*1*	*2*		*35*	*232*	*-25.2*	*141.4*	*+34.1*	*-129.6*	*.658*	
		f	*N*	*2*		*2*	*1*	*3*	*8*	*59*	*-27.5*	*127.7*	*+20.4*	*-145.7*	*.551*	
		1_{1-7}	S	2b×1q					29+	190	-25.0	142.9	+35.6	-128.1	.672	×→10
		7	S				1		1	14	-24.8	138.2	+30.9	-131.4	.623	+16+13
		5	S	1		1			4	17	-26.3	134.2	+26.8	-137.0	.595	
			N)					1	-	1	-25.8	132.5	+25.1	-138.0	.574	
		8	N				1		1	15	-26.3	131.7	+24.3	-139.6	.572	
		3	S				1		1	11	-26.6	130.2	+22.9	-141.5	.561	
		6	N					1	-	2	-27.4	130.3	+22.9	-142.5	.570	
		2_5	N	1		1			2	10	-26.9	127.1	+19.8	-145.7	.537	
		4_{12}	N	1		1			5	22	-28.6	125.9	+18.6	-149.2	.548	
			N)					1	-	9	-27.6	125.1	+17.8	-149.1	.529	
	142	Δ Ж		2	1			2	17	95	+24.4	92.0	-15.4	+29.6	.490	
		p•1	*N*	*2b*	*1a*				*17*	*91*	*+24.4*	*92.2*	*-15.2*	*+29.4*	*.488*	
		f	*S*					*2*	-	*4*	*+25.2*	*87.5*	*-19.9*	*+35.2*	*.535*	
		2_2	S					1	-	1	+25.1	88.2	-19.1	+34.3	.528	
		2_1	S					1	-	3	+25.2	87.3	-20.1	+35.5	.537	
	144	*p*•1	Δ *S*					1	-	2	-22.0	70.6	-36.7	+123.4	.666	
	145	*p*•1	◇ *N*	1		1			7	43	+15.0	51.7	-55.6	+71.6	.842	
	146	*p*•1	Δ *N*					1	-	1	(+15.6	45.2	-62.1	+72.1	.896)	
Dec 13		*5*	*63*	*8*	*2*	*4*	*3*	*7*	*67*	*432*	*{-0.7}*	*{107.3}*		*{+11.1}*	*103*	*663*
347.468	140	Δ-Ж		3	1	2	1	7	23	111	-24.5	142.4	+51.2	-119.9	.819	
G /1114/		*p*	*S*	*3*	*1*	*2*	*1*	*5*	*23*	*109*	*-24.5*	*142.6*	*+51.4*	*-119.8*	*.821*	
		f	*N*					*2*	-	*2*	*-26.4*	*130.4*	*+39.2*	*-127.5*	*.716*	
		(1_{1-5})S		1c	1p				16	91	-24.3	143.5	+52.3	-119.2	.828	$+_2$ $\times_3$
		(1_{6-7})S		1		1	1+	2×	3	9	-25.0	141.7	+50.5	-120.6	.814	→18ysxx

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		7	S'					2	-	2	-25.3	138.6	+47.4	-122.2	.788	→10
		5	S	1		1			4	6	-26.0	133.8	+42.5	-125.1	.745	
		3	S'					1	-	1	-26.9	131.2	+39.9	-127.7	.726	
		8	N					1	-	1	-25.2	130.8	+39.6	-125.8	.713	
		6	N'					1	-	1	-27.5	130.0	+38.8	-129.1	.718	
	142		Δ ◊	2		2	1	2	8	37	+24.3	91.6	+ 0.4	-0.7	.427	
		p•1	*N*	*2*		*2*	*1×*		*8*	*35*	*+24.2*	*91.7*	*+ 0.5*	*-1.0*	*.425*	*×5→8sys*
		f•2₃	*S*					*2*	-	*2*	*+26.2*	*89.1*	*- 2.1*	*+4.3*	*.459*	
	145		Δ ◊	1		1	1	1	3	10	+15.1	51.9	-39.4	+66.1	.672	
		p•1	*N*	*1*		*1*	*1×*		*3*	*8*	*+15.4*	*52.3*	*-39.0*	*+65.5*	*.669*	*×4*
		f•	*S)*					*1*	-	*2*	*+13.7*	*50.5*	*-40.8*	*+68.7*	*.684*	
	146	*p•1*	Δ *N*					1	-	2	+15.7	45.8	-45.5	+67.7	.744	
Dec 14		*4*	*44*	*6*	*1*	*5*	*3*	*11*	*34*	*160*	*{-0.9}*	*{ 91.3}*		*{+10.5}*	*46*	*212*
348.285	140	*p*	◊ *S*	1		1	2	1	16	133	-24.7	142.7	+62.2	-117.1	.904	
K /0651/		(1_{1-5})	S	1		1			14	111	-24.6	143.5	+63.0	-116.8	.909	
		(1_{6-7})	S				1	1×	1	15	-24.9	141.3	+60.8	-117.6	.895	×4→11
		5	S				1		1	7	-26.2	133.7	+53.2	-121.0	.841	
	142		Δ ◊	2		2		3	6	45	+24.1	91.1	+10.5	-21.5	.456	
		p•1	*N*	*2*		*2*			*6+*	*37*	*+24.0*	*91.6*	*+11.0*	*-22.5*	*.458*	*→5 +4+2*
		f	*S*					*3*	-	*8*	*+24.4*	*88.8*	*+ 8.3*	*-17.1*	*.450*	
			S)					1	-	2	+20.7	89.2	+ 8.7	-21.0	.397	
		2_3	S					2	-	6	+25.6	88.6	+ 8.1	-15.8	.467	
	145 ↓	*p•1*	▽ *N*				1		1	17	+15.5	52.2	-28.3	+58.3	.536	
	/146/															INTERMITTENT
	147 ↑		Δ ▽				1	1	1	8	-23.4	59.1	-21.5	+138.7	.511	
		p•1	*S'*				*1*		*1*	*5*	*-23.2*	*59.6*	*-20.9*	*+139.1*	*.503*	
		f•2	*N'*					*1*	-	*3*	*-23.8*	*58.2*	*-22.4*	*+138.1*	*.524*	
Dec 15		*4*	*45*	*3*		*3*	*4*	*5*	*24*	*203*	*{-1.0}*	*{ 80.5}*		*{+10.1}*	*28*	*236*
349.277	140 →	*p•*	(1_{1-5}) ◊ *S*	1		1			15	108	-24.4	142.9	+75.5	-114.9	.973	
K /0639/	142 ↓		Δ ◊	1		1		3	2	22	+24.2	88.9	+21.4	-38.0	.544	
		p•1	*N*	*1*		*1*			*2*	*10*	*+24.0*	*91.0*	*+23.6*	*-40.8*	*.561*	
		f	*S*					*3*	-	*12*	*+24.3*	*87.1*	*+19.6*	*-35.8*	*.529*	
			S)					1	-	5	+21.7	88.1	+20.6	-40.3	.508	
		(2_3)	S					2	-	7	+26.2	86.4	+18.9	-32.5	.544	→6
	/146/															INTERMITTENT
	147		◊ ◊	2		2			12	60	-23.7	58.3	- 9.2	+159.2	.413	*
		p•1	*S*	*1*		*1*			*4*	*21*	*-23.0*	*59.3*	*- 8.2*	*+160.7*	*.397*	
		f•2	*N*	*1*		*1*			*(8)*	*39*	*-24.1*	*57.7*	*- 9.8*	*+158.4*	*.422*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	148 ↑		◊ Δ	1		1		2	3	20	+13.7	35.6	-31.8	+63.7	.574	
		p	*N*					*2*	–	*7*	*+14.3*	*36.5*	*-31.0*	*+62.3*	*.565*	
		f•2_1	*S*	*1*		*1*			*3*	*13*	*+13.4*	*35.1*	*-32.3*	*+64.5*	*.579*	
		1_1	N					1	–	5	+14.0	36.9	-30.5	+62.4	.558	
		1_2	N					1	–	2	+15.0	35.4	-32.1	+61.9	.584	
Dec 16		*4*	*45*	*5*		*5*		*5*	*32*	*210*	*{-1.1}*	*{ 67.4}*		*{+ 9.7}*	*37*	*229*
350.234 /146/																INTERMITTENT
K /0537/																
	147		◊–◊	3		3		3	11	53	-23.8	58.2	+ 3.4	-171.9	.391	
		p	*S*	*1*		*1*		*2*	*3*	*14*	*-22.7*	*60.2*	*+ 5.4*	*-166.7*	*.379*	
		f	*N*	*2*		*2*		*1*	*8*	*39*	*-24.2*	*57.5*	*+ 2.7*	*-173.8*	*.395*	
		1_1	S	1		1			3	9	-22.6	60.5	+ 5.7	-165.9	.378	
		1_2	S'					1	–	4	-22.9	59.9	+ 5.1	-167.5	.380	
		1_3	S'					1	–	1	-23.4	58.9	+ 4.1	-170.2	.384	
		2_1	N	1		1			6	24	-24.1	57.8	+ 2.9	-173.2	.393	
		2_3	N					1	–	5	-24.7	57.5	+ 2.7	-173.9	.403	
		2_2	N	1		1			2	10	-24.3	56.9	+ 2.1	-175.2	.395	
	148		Δ–Δ					3	–	11	+13.8	37.7	-17.1	+47.8	.387	
		p•1_{12}	*N*					*1*	–	*6*	*+14.2*	*38.6*	*-16.2*	*+45.6*	*.381*	
		f	*S*					*2*	–	*5*	*+13.4*	*36.7*	*-18.2*	*+50.4*	*.395*	
		2_1	S'					1	–	4	+13.1	36.8	-18.1	+50.8	.391	
		2_2	S)					1	–	1	+14.4	36.3	-18.6	+48.7	.410	
Dec 17		*2*	*22*	*3*		*3*		*6*	*11*	*64*	*{-1.2}*	*{ 54.8}*		*{+ 9.2}*	*20*	*118*
351.238	146		Δ–Δ					3	–	18	+15.4	46.9	+ 5.3	-17.1	.302	
K /0543/		*p*	*N*					*2*	–	*13*	*+14.9*	*46.6*	*+ 5.0*	*-16.6*	*.294*	
		f•4_1	*S'*					*1*	–	*5*	*+16.5*	*47.7*	*+ 6.1*	*-18.4*	*.323*	
		3_1	N'					1	–	10	+15.1	47.0	+ 5.4	-17.9	.299	
		3_2	N'					1	–	3	+14.4	45.1	+ 3.5	-12.4	.279	
	147		◊ Δ	1		1		1	8	33	-23.8	58.4	+16.8	-145.3	.468	
		p•1_1	*S*					*1*	–	*8*	*-22.6*	*61.4*	*+19.8*	*-139.3*	*.482*	
		f•2_1	*N*	*1*		*1*			*8*	*25*	*-24.2*	*57.5*	*+15.9*	*-147.2*	*.464*	
	148		Δ Δ					2	–	7	+14.0	37.8	- 3.8	+13.4	.274	
		p•	*N'*					*1*	–	*4*	*+14.0*	*39.2*	*- 2.4*	*+8.7*	*.268*	
		f•	*S'*					*1*	–	*3*	*+14.0*	*36.0*	*- 5.6*	*+19.7*	*.282*	
	149 ↦	*p*•1	ℍ *N*	lc	lu				(18)	(266)	+22.0	326.5	-75.1	+67.1	.974	
Dec 18		*4*	*45*	*2*	*1*	*1*		*6*	*26*	*324*	*{-1.4}*	*{ 41.6}*		*{+ 8.8}*	*22*	*227*
352.262	146 ↓		▽ ◊	1		1	2	2	9	52	+15.7	48.3	+20.2	-48.5	.446	
K /0617/		*p*	*N*	*1*		*1*	*1*		*8*	*39*	*+15.2*	*48.7*	*+20.6*	*-49.7*	*.445*	
		f	*S*				*1*	*2*	*1*	*13*	*+17.0*	*47.0*	*+19.1*	*-44.8*	*.447*	
		3_1	N	1		1			7	29	+15.3	49.1	+21.0	-50.2	.451	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		4_1	S				1	1×	1	10	+17.3	47.3	+19.4	-44.8	.453	×5
		3_2	N				1		1	10	+15.1	47.4	+19.3	-48.3	.429	
		4_2	S)					1	-	3	+16.2	46.2	+18.1	-44.7	.426	
	147↓		◇ Δ	1			1	1	3	18	-23.7	58.3	+30.2	-129.7	.601	
		p•1₁	*S'*					*1*	*-*	*3*	*-22.3*	*62.2*	*+34.1*	*-124.8*	*.634*	
		f•2₁	*N*	*1*			*1*		*3*	*15*	*-24.0*	*57.5*	*+29.4*	*-130.7*	*.594*	
	/148/															INTERMITTENT
	149		◇ Ж	2	1	1	1		40	289	+21.9	325.9	-62.2	+65.0	.907	
		p•1	*N*	*1c*	*1q*				*30*	*230*	*+22.0*	*327.5*	*-60.6*	*+64.5*	*.897*	
		f↑2₁	*S*	*1*		*1*	*1×*		*10*	*59*	*+21.3*	*319.7*	*-68.4*	*+66.8*	*.944*	×12↑9
Dec 19		*3*	*37*	*4*	*1*	*3*	*3*	*3*	*52*	*359*	{-1.5}	{ 28.1}		{+ 8.3}	*54*	*364*
353.242	/148/															INTERMITTENT
K /0548/	149		◇ Ж	3	1	1		2	33	240	+21.8	326.4	-48.8	+60.9	.801	
		p•1	*N*	*2b*	*1q*				*28+*	*201*	*+21.9*	*327.8*	*-47.4*	*+60.3*	*.789*	*+19+9*
		f	*S*	*1*		*1*		*2*	*5*	*39*	*+21.2*	*319.3*	*-55.9*	*+64.0*	*.860*	
		2_2	S					1	-	6	+22.6	319.6	-55.6	+62.4	.862	
		2_1	S	1		1		1×	5	33	+21.0	319.3	-55.9	+64.3	.860	×6↑5
Dec 20		*1*	*16*	*3*	*1*	*1*		*2*	*33*	*240*	{-1.6}	{ 15.2}		{+ 7.8}	*40*	*287*
354.235	148		▽ Δ				1	2	1	10	+14.9	33.4	+31.3	-60.8	.577	
K /0538/		*p↑3*	*N*					*2*	*-*	*5*	*+15.0*	*34.1*	*+32.0*	*-61.0*	*.587*	
		f•4	*S*				*1*		*1*	*5*	*+14.7*	*32.7*	*+30.6*	*-60.5*	*.567*	
	149		Δ-Ж	2	1			6	29	207	+22.2	327.3	-34.8	+52.7	.666	
		p	*N*	*2*	*1*			*2*	*29*	*195*	*+22.2*	*327.7*	*-34.4*	*+52.4*	*.661*	
		f	*S*					*4*	*-*	*12*	*+21.5*	*319.6*	*-42.5*	*+58.3*	*.741*	
		1	N	2b	1r				29+	191	+22.2	327.8	-34.3	+52.4	.660	+16+13
			N)					1	-	2	+25.0	325.4	-36.7	+50.7	.703	
			N)					1	-	2	+23.9	323.5	-38.6	+53.3	.715	
		2_2	S'					1	-	4	+22.5	319.7	-42.4	+57.1	.744	
		2_1	S'					3	-	8	+21.0	319.6	-42.6	+58.9	.739	→8↑6
Dec 21		*2*	*27*	*2*	*1*		*1*	*8*	*30*	*217*	{-1.7}	{ 2.1}		{+ 7.4}	*45*	*325*
ROT No *1663*																
355.418	148↓		Δ Δ					2	-	18	+14.4	34.6	+48.1	-69.4	.771	
E /1002/		*p•3*	*N*					*1*	*-*	*14*	*+14.4*	*35.1*	*+48.6*	*-69.6*	*.777*	
		f•4	*S*					*1*	*-*	*4*	*+14.5*	*32.7*	*+46.2*	*-68.8*	*.752*	
	149		Δ Ж	2	1			1	27	205	+22.5	327.8	-18.7	+35.8	.509	
		p•1	*N*	*2b*	*1r*				*27+*	*196*	*+22.5*	*328.1*	*-18.4*	*+35.4*	*.506*	*+17+10*
		f•2₃	*S*					*1*	*(-)*	*9*	*+21.7*	*320.9*	*-25.7*	*+45.4*	*.568*	
Dec 22		*2*	*28*	*2*	*1*			*3*	*27*	*223*	{-1.9}	{346.5}		{+ 6.8}	*47*	*376*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
356.319	149	p•1	⌑ N	1b	1q				20	189	+22.3	327.7	- 7.0	+15.3	.428	
K /0739/	150 ↑	f	Δ N					3	-	13	-25.2	356.0	+21.4	-140.3	.518	
		2	N'					1	-	4	-27.1	357.7	+23.0	-140.9	.553	
			N)					2	-	9	-24.4	355.3	+20.7	-140.0	.503	→6↓13
Dec 23		*2*	*27*	*1*	*1*			*3*	*20*	*202*	*{-2.0}*	*{334.7}*		*{+ 6.4}*	*36*	*364*
357.233	149	p•1	⌑ N	1b	1r				29	252	+22.4	327.5	+ 4.8	-10.6	.424	
K /0536/	150		◇ ▽	1		1	2	1	11	90	-27.6	356.7	+34.1	-131.3	.664	
		p	S				2	1	2	38	-26.9	358.1	+35.5	-129.5	.674	
		f•2	N	1		1			9	52	-28.1	355.7	+33.1	-132.7	.657	
		1_2	S				1		1	10	-27.6	358.2	+35.6	-130.3	.678	
		1_1	S				1	1×	(1)	28	-26.7	358.1	+35.5	-129.2	.672	×←
	151 ↳→		Δ ◇	1		1		1	6	52	+17.1	254.0	-68.6	+71.0	.943	
		p•1	N'	1		1			(6)	(45)	+16.5	254.4	-68.2	+71.6	.940	
		$f•2_1$	S'					1	-	(7)	+21.1	251.6	-71.1	+67.2	.959	
Dec 24		*3*	*43*	*3*	*1*	*2*	*2*	*2*	*46*	*394*	*{-2.1}*	*{322.6}*		*{+ 6.0}*	*73*	*626*
358.493	149		Δ ⌑	1	1			1	26	211	+22.5	326.8	+20.8	-38.2	.531	
G /1150/		p•1	N	1b	1r				26	210	+22.5	326.8	+20.8	-38.2	.531	
		$f•(2_3)$	S					1	-	1	+21.9	320.9	+14.9	-30.3	.473	
	150		◇–◇	5		4		4	26	144	-26.3	355.6	+49.5	-121.6	.803	
		p	S	2		2		2	11	62	-25.8	357.4	+51.4	-120.3	.818	
		f	N	3		2		2	15	82	-26.7	354.1	+48.1	-122.6	.792	
		3	S					1	-	2	-25.4	360.1	+54.1	-119.2	.839	
		1_1	S	1		1			2	7	-26.4	358.2	+52.2	-120.9	.826	
		1_2	S'					1	-	11	-27.5	358.1	+52.1	-122.1	.829	
		5_1	S	1b		1a			9	42	-25.2	357.0	+51.0	-119.8	.813	
		4	N'					1	-	3	-28.1	355.7	+49.7	-123.7	.811	
		6_1	N	2		1			12	71	-26.4	354.1	+48.0	-122.3	.790	
		2	N	1		1		1×	3	8	-28.5	354.0	+48.0	-124.9	.798	×4←8↓5
	151		◇–◇	2		2		2	11	59	+19.2	252.1	-54.0	+65.3	.842	
		p	N	1		1		1	2	16	+16.4	255.3	-50.7	+67.7	.805	
		f	S	1		1		1	9	43	+20.3	250.8	-55.2	+64.4	.856	
		1	N	1		1			2	15	+16.2	255.4	-50.6	+67.8	.804	
		3	N'					1	-	1	+18.9	254.2	-51.9	+65.8	.823	
		2_1	S	1		1			9	37	+20.2	251.0	-55.0	+64.5	.854	
		2_2	S					1	-	6	+21.0	249.8	-56.2	+64.0	.865	
Dec 25		*3*	*42*	*8*	*1*	*6*		*7*	*63*	*414*	*{-2.3}*	*{306.0}*		*{+ 5.3}*	*87*	*593*

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
359.402 G /0940/	149	*p•1*	♊ *N*	lb lr					30	213	+22.6	326.3	+32.2	-49.8	.647	
	150		◇-◇	7		6		8	37	213	-26.0	356.0	+62.0	-117.9	.900	
	p		*S*	*5*		*4*		*6*	*22*	*118*	*-25.7*	*358.0*	*+64.0*	*-117.2*	*.913*	
	f		*N*	*2*		*2*		*2*	*15*	*95*	*-26.3*	*353.6*	*+59.6*	*-118.8*	*.884*	
	3	S'		1		1a			3	24	-25.6	360.5	+66.4	-116.4	.927	
		S)						3	-	3	-25.5	358.6	+64.6	-117.0	.916	→14
	1_1	S		1		1			5+	27	-26.3	357.8	+63.8	-118.0	.912	+4+
	5_{12}	S		2		1			11	52	-25.3	357.3	+63.3	-116.9	.908	
	1_2	S'		1		1a			3	9	-27.0	356.8	+62.7	-118.9	.906	
		S)						3	-	3	-25.6	356.3	+62.2	-117.5	.901	→8+8
	6_2	N		1		1			4	15	-26.7	355.0	+61.0	-118.9	.894	
	4	N'						1	-	1	-27.9	354.0	+59.9	-120.4	.889	
	6_1	N		1		1a			11	78	-26.2	353.3	+59.3	-118.7	.882	
	2	N'						1	-	1	-28.7	352.5	+58.5	-121.7	.880	
	151		◇ ◇	2		2		4	7	22	+20.1	252.3	-41.8	+59.3	.730	
	p•3		*N'*	*1*		*1*		*1×*	*2*	*5*	*+19.1*	*255.6*	*-38.5*	*+58.7*	*.691*	$×_2$←
	f		*S*	*1*		*1*		*3*	*5*	*17*	*+20.4*	*251.3*	*-42.7*	*+59.5*	*.742*	
	4	S'						2	-	2	+20.7	255.0	-39.0	+57.1	.705	→8
	2_1	S		1		1			5	14	+20.3	250.8	-43.2	+59.8	.746	
	2_2	S'						1	-	1	+20.6	250.4	-43.7	+59.6	.752	
	152↑		◇ ◇	2		2		2	6	20	+20.3	236.2	-57.9	+65.1	.877	
	p		*N*	*1*		*1*		*2*	*2*	*7*	*+20.2*	*238.0*	*-56.1*	*+64.7*	*.863*	
	f•2_1		*S'*	*1*		*1*			*4*	*13*	*+20.4*	*235.2*	*-58.9*	*+65.3*	*.885*	
	1_1	N'		1		1			2	5	+20.2	238.2	-55.9	+64.7	.861	
	1_2	N'						1	-	1	+21.0	237.5	-56.5	+64.0	.868	
		N)						1	-	1	+19.7	237.4	-56.7	+65.5	.866	
Dec 26		*4*	*51*	*12*	*1*	*10*		*14*	*80*	*468*	*{-2.4}*	*{294.1}*		*{+ 4.9}*	*93*	*559*
360.536 G /1251/	149	*p•1*	♊ *N*	lb lr					28	198	+22.8	326.3	+47.2	-58.5	.795	
	150→		◇ ◇	3		3			10	62	-26.5	357.3	+78.2	-116.8	.980	
	p		*S*	*2*		*2*			*8*	*50*	*-26.6*	*358.3*	*+79.2*	*-116.6*	*.983*	
	f•6_1		*N*	*1*		*1*			*2*	*12*	*-26.3*	*353.2*	*+74.1*	*-117.6*	*.965*	
	5_{12}	S		1		1			6	12	-25.8	358.5	+79.4	-115.7	.984	
	1_{12}	S		1		1			2	38	-26.8	358.3	+79.1	-116.9	.983	
	151	*f*	▽ *S*				1	3	1	23	+20.1	250.9	-28.2	+49.5	.586	
	4	S'						1	-	1	+20.5	254.5	-24.7	+45.3	.552	
		S)						1	-	6	+19.7	251.8	-27.3	+49.1	.573	
	2_{12}	S					1	1×	1	16	+20.2	250.4	-28.7	+49.9	.593	$×_2$→7
	152		◇ ◇	3		3	1	3	15	76	+20.3	236.7	-42.5	+59.2	.739	
	p		*N*	*2*		*2*	*1*	*2*	*5*	*23*	*+20.5*	*240.3*	*-38.9*	*+57.0*	*.703*	
	f		*S*	*1*		*1*		*1*	*10*	*53*	*+20.2*	*235.2*	*-44.0*	*+60.2*	*.754*	
	1_1	N		1		1			2	7	+20.3	240.8	-38.3	+56.9	.696	train
	1_{23}	N		1		1	1×		3	12	+20.6	240.4	-38.8	+56.8	.702	$×_5$←
	1_4	N						2	-	4	+20.8	238.9	-40.2	+57.5	.719	
		S)						1	-	5	+20.0	236.1	-43.1	+60.0	.744	
	2_1	S		1		1			10	48	+20.2	235.1	-44.1	+60.2	.755	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
continued																
	153	(◇)⌑		2	1	1		1	36	299	-18.6	203.4	-75.8	+108.6	.970	
		p	*S*	*1*	*1*			*1*	*27*	*177*	*-18.5*	*204.6*	*-74.6*	*+108.5*	*.965*	
		f•2_{12}	*N'*	*1*		*1a*			*(9)*	*(122)*	*-18.8*	*201.7*	*-77.5*	*+108.7*	*.977*	
		1_0	S'					1	-	2	-20.2	204.8	-74.3	+110.3	.965	
		1	S'	1c	1u				(27)	175	-18.5	204.6	-74.6	+108.5	.965	
Dec 27		*5*	*61*	*9*	*2*	*7*	*2*	*7*	*90*	*658*	*{-2.5}*	*{279.1}*		*{+ 4.4}*	*78*	*549*
361.258 K /0612/	149	*p*•1	⌑ *N*	1b	1r				30	252	+22.9	326.4	+56.8	-61.9	.876	
	151		△ △					3	-	14	+18.9	254.5	-15.2	+34.1	.442	
		p•*(3)*	*N'*					*1*	-	*2*	*+18.0*	*258.4*	*-11.2*	*+27.9*	*.398*	
		f	*S*					*2*	-	*12*	*+19.0*	*253.8*	*-15.8*	*+35.1*	*.450*	
		4_0	S'					1	-	9	+18.7	254.3	-15.3	+34.7	.441	
		4	S'					1	-	3	+19.9	252.3	-17.4	+36.4	.475	
	152		◇ ◇	4		4	2	4	21	133	+20.2	238.1	-31.5	+52.0	.624	
		p	*N*	*2*		*2*	*2*	*1*	*11*	*75*	*+20.4*	*240.7*	*-28.9*	*+49.6*	*.597*	
		f	*S*	*2*		*2*		*3*	*10*	*58*	*+20.0*	*234.6*	*-35.0*	*+55.1*	*.660*	
		1_1	N	1		1			7	44	+20.3	241.3	-28.3	+49.2	.590	train
		1_{2-4}	N				2	1	2	22	+20.5	240.2	-29.4	+49.9	.603	→9yxy
		1_5	N	1		1			2	9	+20.5	239.1	-30.5	+51.0	.615	
		2_2	S					2	-	7	+19.7	235.8	-33.8	+54.6	.644	→8
		2_1	S	2		2			10+	49	+20.1	234.5	-35.1	+55.1	.662	→7 +7+3
			S)					1	-	2	+19.8	233.1	-36.5	+56.3	.675	
	153		⌑ ◙	2		2		1	63	368	-18.5	203.0	-66.6	+109.0	.922	
		p	*S*	*1*		*1*		*1*	*37*	*192*	*-18.2*	*204.7*	*-64.9*	*+108.8*	*.911*	
		f•2_{12}	*N*	*1c*		*1a*			*26*	*176*	*-18.8*	*201.2*	*-68.4*	*+109.2*	*.933*	
		1	S	1c		1r			37	188	-18.2	204.7	-64.9	+108.8	.911	
		1_0	S'					1	-	4	-20.1	204.2	-65.4	+110.9	.916	
Dec 28		*4*	*55*	*7*	*3*	*4*	*2*	*8*	*114*	*767*	*{-2.6}*	*{269.6}*		*{+ 4.0}*	*111*	*761*
362.240 K /0546/	149	*p*•1	⌑ *N*	1c	1r				27	206	+22.8	326.1	+69.4	-65.0	.953	
	151	*f*	△ *S*					3	-	16	+21.3	250.0	- 6.6	+14.7	.422	
		4_0	S'					1	-	4	+18.8	253.9	- 2.8	+7.1	.371	
		6_1	S'					1	-	3	+21.1	248.9	- 7.7	+17.3	.423	
		6_2	S'					1	-	9	+22.4	248.7	- 8.0	+16.8	.445	
	152		◇ ◇	2		2	1	3	19	126	+20.3	238.0	-18.7	+37.3	.495	
		p	*N*	*1*		*1*		*1*	*12*	*63*	*+20.5*	*241.5*	*-15.2*	*+32.1*	*.464*	
		f	*S*	*1*		*1*	*1*	*2*	*7*	*63*	*+20.1*	*234.5*	*-22.2*	*+42.5*	*.525*	
		1_{1-4}	N	1		1			12	62	+20.5	241.5	-15.2	+32.1	.464	
		1_5	N					1	-	1	+20.7	240.5	-16.2	+33.4	.476	
		2_2	S					2	-	10	+20.1	235.8	-20.9	+41.0	.511	→7
		2_3	S				1		1	15	+21.0	234.8	-21.9	+41.1	.531	
		2_1	S	1		1			6	38	+19.8	234.1	-22.6	+43.5	.526	
	153		◇-◙	4	1	1		3	54	385	-18.6	203.2	-53.5	+111.0	.818	
		p	*S*	*2*	*1*			*1*	*40*	*227*	*-18.3*	*204.5*	*-52.2*	*+110.9*	*.806*	
		f	*N*	*2*		*1*		*2*	*14*	*158*	*-18.9*	*201.4*	*-55.3*	*+111.0*	*.835*	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1	S	2b	1p				40+	223	-18.3	204.5	-52.2	+110.9	.806	+36+4
		1_o	S					1	-	4	-20.1	204.1	-52.6	+112.9	.813	
		2_o	N'					1	-	7	-19.3	203.0	-53.7	+111.7	.821	
		2_{12}	N	2		1a			14+	148	-18.9	201.4	-55.3	+111.0	.835	+8+6
			N)					1	-	3	-19.3	198.8	-57.9	+110.8	.858	
	154→	*p*	Ⅱ *S*	2	2				37	301	-18.2	179.3	-77.4	+108.1	.975	
		1	S	1c	1q				(16)	139	-18.6	180.8	-75.9	+108.5	.970	
		3_1	S	1c	1u				(21)	162	-17.9	178.0	-78.7	+107.7	.980	
Dec 29		*5*	*69*	*9*	*4*	*3*	*1*	*9*	*137*	*1034*	*{-2.7}*	*{256.7}*		*{+ 3.5}*	*128*	*947*
363.094 I /0215/	149→	*p*•1	(Ⅱ) *N*	(1)	(1)				(-)	(16)	+22.8	326.4	+80.9	(-66.6	.992)	
	151		◇-◇	3		2	1	5	9	51	+20.3	250.1	+ 4.7	-11.0	.402	
		p	*N*	*2*		*1*		*1*	*4*	*24*	*+20.3*	*251.2*	*+ 5.8*	*-13.6*	*.406*	
		f	*S*	*1*		*1*	*1*	*4*	*5*	*27*	*+20.3*	*249.0*	*+ 3.6*	*-8.7*	*.399*	
			N)					1	-	1	+17.3	254.2	+ 8.8	-23.0	.374	
		5_1	N	2		1			4	23	+20.4	251.1	+ 5.7	-13.2	.407	
			(S)					2	-	4	+19.9	249.7	+ 4.3	-10.4	.394	
		6_2	S				1	2	1	7	+21.4	249.0	+ 3.6	-8.1	.415	→5↑6xxy
		6_1	S	1		1			4	16	+20.0	248.9	+ 3.5	-8.5	.393	
	152		◇-◇	2		2	4	6	16	87	+20.3	239.2	- 6.2	+14.2	.410	
		p	*N*	*1*		*1*	*1*	*3*	*10*	*63*	*+20.3*	*241.0*	*- 4.4*	*+10.3*	*.401*	
		f	*S*	*1*		*1*	*3*	*3*	*6*	*24*	*+20.3*	*234.5*	*-11.0*	*+24.5*	*.433*	
		1_{1-5}	N	1		1			9	55	+20.2	241.6	- 3.8	+9.1	.397	
		3_1	N					1	-	1	+20.9	238.6	- 6.8	+15.4	.418	
		5_1	N'				1		1	3	+20.8	237.2	- 8.2	+18.4	.423	train
		5_2	N'					1	-	2	+20.9	236.7	- 8.7	+19.4	.427	
		5_3	N'					1	-	2	+21.0	236.5	- 9.0	+19.8	.431	
		2_3	S	1		1		1×	3	12	+20.4	234.9	-10.5	+23.4	.432	×2→
		6_3	S'					1	-	2	+21.6	234.8	-10.7	+22.7	.448	
		2_2	S'				1		1	3	+19.6	234.5	-11.0	+25.2	.422	
		2_1	S				1		1	4	+19.5	233.7	-11.8	+27.0	.426	
		6_2	S'					1	-	1	+21.3	233.7	-11.7	+24.9	.451	
		6_1	S				1		1	2	+21.0	233.2	-12.3	+26.3	.450	
	153		◇-Ⅱ	4	1	2	2	2	39	267	-18.2	203.8	-41.6	+113.7	.691	
		p	*S*	*2*	*1*			*1*	*29*	*197*	*-18.0*	*204.7*	*-40.7*	*+113.7*	*.680*	
		f	*N*	*2*		*2*	*2*	*1*	*10*	*70*	*-18.8*	*201.4*	*-44.1*	*+113.6*	*.721*	
		1	S	2d	1q				29+	196	-18.0	204.7	-40.7	+113.7	.680	+26+3
		1_1	S					1	-	1	-18.0	203.1	-42.4	+113.2	.700	
		2_o	N'				2	1	2	7	-18.8	202.5	-42.9	+114.1	.709	→8xyy
		2_2	N	1		1			4	24	-18.2	201.8	-43.6	+113.0	.714	
		2_1	N	1		1			4	39	-19.1	200.9	-44.6	+113.9	.728	
	154		◇-Ⅱ	7	2	3		3	58	352	-18.1	179.7	-65.7	+108.6	.915	
		p	*S*	*5*	*2*	*1*			*45*	*280*	*-18.2*	*180.8*	*-64.6*	*+108.8*	*.908*	
		f	*N*	*2*		*2*		*3*	*13*	*72*	*-17.9*	*175.5*	*-70.0*	*+108.0*	*.941*	
		1	S	1b	1a				19	130	-18.2	181.6	-63.9	+108.8	.903	
		1_o	S	1		1			6	25	-19.1	180.9	-64.5	+109.8	.908	
		3_1	S	3e	1n				20+	125	-18.0	180.0	-65.4	+108.5	.913	+16+2+2

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		4_2	N'					1	-	4	-17.4	176.3	-69.1	+107.5	.937	
		4_1	N	1b		1			10	55	-18.2	176.3	-69.2	+108.4	.937	
		2	N'	1		1		2×	3+	13	-16.8	172.1	-73.4	+106.7	.959	+2+ ×←
Dec 30		*5*	*69*	*17*	*4*	*9*	*7*	*16*	*122*	*773*	*{-2.8}*	*{245.4}*		*{+ 3.1}*	*148*	*925*
364.336	151		◇ ◇	3		3	1	4	7	42	+20.2	249.8	+20.7	-40.2	.516	
G /0803/	*p*		*N*	*1*		*1*		*2*	*2*	*15*	*+19.8*	*252.5*	*+23.4*	*-44.2*	*.538*	
	f		*S*	*2*		*2*	*1*	*2*	*5*	*27*	*+20.5*	*248.3*	*+19.3*	*-38.0*	*.504*	
		N)						1	-	2	+20.4	255.0	+25.9	-46.2	.569	
		5_1	N	1		1			2	10	+19.5	252.2	+23.2	-44.4	.532	
		5_2	N)					1	-	3	+20.5	251.6	+22.5	-42.3	.535	
			(S)					1	-	3	+17.2	248.7	+19.6	-43.1	.471	
		6_1	S	1		1	1×		3	16	+20.3	248.4	+19.4	-38.3	.503	×4←
		6_3	S	1		1			2	6	+22.3	248.0	+19.0	-35.3	.522	
		6_2	S'					1	-	2	+21.0	247.5	+18.4	-36.2	.502	
	152		◇-◇	10		8	3	8	41	186	+20.3	236.7	+ 7.6	-17.3	.417	
	p		*N*	*4*		*4*	*2*	*7*	*17*	*80*	*+20.3*	*239.5*	*+10.4*	*-23.4*	*.431*	
	f		*S*	*6*		*4*	*1*	*1*	*24*	*106*	*+20.3*	*234.5*	*+ 5.4*	*-12.8*	*.406*	
		1_{1-5}	N	1		1			6	21	+20.0	241.4	+12.3	-27.2	.439	
		3_1	N	1		1			5	19	+20.4	240.1	+11.0	-24.4	.435	train
		3_2	N				1		1	6	+19.9	239.4	+10.3	-23.5	.424	
		3_3	N					1	-	5	+19.5	239.1	+10.0	-23.2	.417	
		5_1	N	1		1			2	6	+20.6	238.7	+ 9.6	-21.4	.430	train
			N)					1	-	2	+20.2	238.6	+ 9.5	-21.5	.424	
			N)					1	-	1	+21.2	238.4	+ 9.3	-20.3	.437	
		5_2	N	1		1			2	9	+20.4	238.2	+ 9.1	-20.6	.425	
		5_3	N				1		1	4	+20.3	237.8	+ 8.7	-19.8	.420	
			N)					1	-	1	+21.5	237.2	+ 8.1	-17.6	.435	
		5_4	N'					1	-	2	+20.6	237.2	+ 8.1	-18.4	.423	
		5_5	N'					1	-	2	+20.8	236.8	+ 7.7	-17.3	.422	
		5_6	N'					1	-	2	+20.9	236.1	+ 7.0	-15.7	.422	
		4	S	3d		1u			9+	36	+19.4	235.8	+ 6.7	-16.2	.397	+3+3+3
			S)					1	-	2	+19.2	234.7	+ 5.6	-13.8	.390	
		6_3	S	1b		1			5	23	+21.6	234.4	+ 5.3	-11.8	.426	
		2_3	S	1b		1			6	8	+19.9	234.2	+ 5.2	-12.3	.400	
		6_1	S	1		1			3	34	+20.5	233.4	+ 4.3	-10.0	.406	
		2_1	S'				1		1	3	+19.3	233.3	+ 4.2	-10.3	.387	
	153		▽ Ⅱ	3	1		2	4	29	214	-18.4	204.6	-24.5	+124.5	.479	
	p		*S*	*3*	*1*			*1*	*27*	*190*	*-18.3*	*205.0*	*-24.1*	*+124.7*	*.473*	
	f		*N*				*2*	*3*	*2*	*24*	*-19.2*	*201.3*	*-27.7*	*+123.1*	*.527*	
		1	S	3t	1p				27+	189	-18.3	205.0	-24.1	+124.7	.473	+13+10+4
		1_1	S					1	-	1	-18.0	203.3	-25.8	+122.5	.493	
		2_0	N				1	1×	1	8	-19.5	202.1	-27.0	+124.2	.519	×←5+7
		2_2	N					1	-	4	-18.5	201.7	-27.4	+122.1	.517	
		2_1	N				1	1×	1	12	-19.3	200.7	-28.3	+122.7	.535	×6→
	154		◇-Ⅱ	6	2	4	2	7	51	361	-18.2	180.0	-49.1	+111.3	.772	
	p		*S*	*4*	*2*	*2*		*3*	*40*	*280*	*-18.1*	*181.3*	*-47.8*	*+111.5*	*.759*	
	f		*N*	*2*		*2*	*2*	*4*	*11*	*81*	*-18.5*	*175.6*	*-53.5*	*+110.7*	*.817*	
		S)						1	-	1	-16.4	183.4	-45.7	+109.8	.732	
		S)						1	-	1	-15.9	182.1	-46.9	+108.9	.745	

continued

DATE OBS UT	GROUP No	SPOT SIGN	MAGN POL	NUMBER OF SPOTS U	m	s	y	x	U area	U+P area	B°	L°	L_{CM}°	ϑ°	r/R	EXTRA DATA
		continued														
		1	S	1c	1a				18	131	-17.9	182.0	-47.0	+111.4	.750	
		1_o	S	1		1			3	30	-18.7	181.1	-48.0	+112.2	.762	
		3_1	S	1b	1a				16	84	-18.1	180.7	-48.4	+111.4	.765	
		3_2	S	1		1a			3	31	-18.8	179.8	-49.3	+112.0	.776	
			S)					1	-	2	-18.3	179.3	-49.8	+111.3	.780	
			(N)					1	-	2	-19.5	177.9	-51.2	+112.4	.797	
		4_3	N				1		1	14	-19.5	176.5	-52.6	+112.1	.810	
			N)					2	-	3	-17.6	176.3	-52.8	+109.7	.809	
		4_1	N	1		1			6	40	-18.6	175.8	-53.2	+110.9	.815	
		4_2	N	1		1			3	17	-17.7	175.0	-54.1	+109.6	.821	
			N)					1	-	1	-17.6	173.1	-56.0	+109.1	.839	
		2	N				1		1	4	-17.1	171.0	-58.1	+108.3	.856	
Dec 31		*4*	*65*	*22*	*3*	*15*	*8*	*23*	*128*	*803*	*{-3.0}*	*{229.1}*		*{+ 2.5}*	*202*	*1244*

Notes on Sunspot Groups

GROUP No

0 = Greenwich group No 23738. This is the only group which survived from 1976 to 1977. Its spot 1 has been rotated onto the disc on 1976 Dec.24 as the original leader of the group.

1 Belongs to the OLD Cycle (No 20). It is the return of Greenwich group No 23733, born on Dec.7 and passed round the west limb on Dec.17. Our spot 1 is the original Dec.7 leader, i.e. lasting for 30 days.

2 Cf. group No 6.

4 On Jan.11-12 both parts of the group form an arc-like configuration. On Jan.13 the leader is strikingly elongated. On Jan.14 a new umbra (U = 4) also joins spot 2_{1-3} for one day's duration.

6 Return of group No 2; spot 1 of group 2 returns as spot 1 of group 6; this high latitude spot has a 26-day duration.

10 On Jan.28 the *p*-part shows an arc-like configuration. Cf. also group No 18.

11 After Feb.1 the group develops into a long stream of spots (embedded in an east-west elongated narrow facular region, clearly visible on the 2nd and 3rd); especially the *p*-part of the group reveals a train-like configuration, it is dissolved by Feb.6.

12 Initially a single spot at the east limb on Feb.5-6; after a one-day intermittency the *p*-part shows an arc-like configuration and the whole group develops rapidly to form a long multiple bipolar group. On the southern hemisphere this group is observed to be the farthest from the equator in 1977.

15 A regular bipolar group of 7-day duration, belonging to the OLD Cycle (No 20).

GROUP No

18 In the beginning a single spot. Spot 1_{12} of group 10 returns as spot 1 of group 18 and passes round the west limb, i.e. lasting longer than 31 days. On Feb.18 five short-lived little following spots appeared; a few seen even on the following days, too.

27 On Apr.2 a one-day group of an unknown polarity single spot (U+P = 5, B = +27.9°, L = 247.6°) is observed NE of spot 2.

29 This spot region is rather a complex of two groups of spots. Spots 1 and 3 rotate onto the disc and are probably the remnants of two old groups. On Apr.13 an emergence of new spots occurs in the middle of the region. All these new spots spread out and fade away by Apr.23. The remaining spot 1 passes round (cf. group 35), while spot 3 also dies out before reaching the west limb.

31 On Apr.23 both parts of the group may be regarded as arc-like configurations. Cf. also group No 35.

32 The group rotates onto the disc as a single spot and disintegrates slowly in 8 days.
A one-day group of an unknown polarity single spot (U+P = 2, B = -26.7°, L = 200.0°) is observed SW of the group on the last day of its life on May 4.

33 In a single extended facular region a clear double group. After rapidly approaching one another spots 3_{12} and 2_1 are blown up into several pieces by May 5.
On May 4, at the maximal development of the group, a one-day group of a single unknown polarity spot (U+P = 1, B = +28.9°, L = 128.8°) appears S of spot 3_{12}.

35 On May 9, spot 1 of group 35 is the return of spot 1_{12}, the only survivor at the west limb of group 29, and spot 3 rotates onto the disc on the next day, the return of spot 1_2 of group 31. Both of these two old leader spots stand alone for a couple of days. Spot 3 gradually decays and disappears by May 16, when spot 1 starts to decline rapidly and dies out in two days. Spot 1 lives more than 38 days, while spot 3 lasts 25 days. On May 15, the little spot 2 emerges and remains the last to disappear (May 19). However, in the

continued

GROUP No

continued

meantime, on May 16 in the vicinity where spot 3 disappeared, a bipolar cluster of several little spots emerges suddenly, where the opposite polarities lie roughly in a north-south direction. West of spot 1 a similarly directed spot pair is also visible.

42 On May 30 spots 2_0, 2_1, 2_2, 2_3, 2_4 and 2_5 form a train-like spot configuration along an arc, which remains perceivable for three more days. Cf. also group No 51.

43 On June 2, the *f*-part shows an arc-like configuration. Cf. group No 52.

44 On June 3, in the slowly decaying simple bipolar group after the disappearance of the *f*-part, a new bipolar pair of spots emerges which should also be regarded as a close but different group.

45 On June 7 the spot 2_{1-3} has a C-shape and it reveals a fairly similar form on the next day.

47 On June 15 W of spot 1 an ephemeral bipolar pair of two little spots are observed exactly north-south of one another. Cf. also group No 60.

51 The group is nearly always a slowly shrinking single spot. This spot 1 is the return of spot 1_{1-4} of group 42.
On June 27, on the last day of the spot which lasts for 31 days, north of it, a one-day group of two unknown polarity spots emerges (U+P = 2, B = +26.8°, L = 211.3°; U+P = 2, B = +23.9°, L = 208.2°).

52 Spot 1_1 of the group, which is for two days near the east limb a separated spot, is the return of spot 3 of group 43. Spot 1_1 (a part of spot 1_{1-3}) passes over the west limb, i.e. it lives more than 31 days.

53 The largest group of the New Cycle (No 21) in 1977. On June 26 almost all of their umbrae are embedded in a single penumbra. Its leading umbra (1_1) enters the disc as U > 60 and passes the west limb as (1_{12}) U > 30. Cf. also group No 61.

GROUP No

54 The smallest group of the OLD Cycle (No 20) in 1977.

60 Spot 1 is the return of spot 1 of group 47. It is the only spot of group 60. Over five days spot 1 remains quite stable but starts to disintegrate slowly by July 10 and disappears on July 14. This spot lives for more than 37 days. On July 9 a spot of north polarity appears south-west of spot 1, which after an intermittence of two days probably reappears as one of the members of a reversed polarity little spot pair.

61 The group consists only of spot 1, the return of spot 1_{12} of group 53. The spot is in slow decay, however a weak activity is noticeable around it for four days beginning with the fifth day of its passage over the disc. A few little spots represent an ephemeral *f*-part for three days.
Moreover, two one-day groups also emerge not far from spot 1. On July 24, a *p*-polarity spot of U+P = 2, B = +12.6°, L = 141.0° and on July 26, an unknown polarity spot of U+P = 1, B = +11.7°, L = 149.3°.

62 Cf. group No 75.

70 A single old leader rotates onto the disc and remains a quite stable spot which hardly grows less as it disappears at the west limb. It returns as the leader of group 84 again alone after a forthnight and as a diminished spot once more survives alone when it passes round the west limb (it lives more than 41 days). During both its disc passages new spot activities develop close eastwards of this old leader. The extended NE part of group 70 in itself (i.e. without the old leader) becomes a compact multiple spot group for a couple of days, while the group 84 may be regarded only as a rather simple double group.

72 The group mainly consists of three successive bipolar spot pairs. The latest passes round the west limb and its leader, spot 5, lasting for 21 days, returns as spot 1 of group 87.

75 Spot 1 lasting for 23 days is the return of spot 5 of group 62. The life history of group 62 has some resemblance to group 72.

GROUP No

78 The only group of higher heliographic latitude than 10°, whose polarity distribution corresponds to that of the OLD Cycle (No 20).

79 On Aug.25 the *f*-part of the group shows an arc-like configuration. The spots of the group reveal an almost straight line on the disc during the last six days of its disc passage.

84 Cf. group 70.

87 Cf. group 72.

90 The very largest group of the year 1977 belongs to the OLD Cycle (No 20). The group, born on the far side of the Sun, rotates onto the disc as a great compact group of several quasi-parallel close bipolar spot pairs. The most persistent pair of umbrae 1_1 and 2_1 (which returns in the next rotation), together with the pair of 3 and 4_{12}, reveals the principal characteristics of the group, most clearly on Sept.17. The main leader comprises two umbrae of unequal areas; their joining line displays rotation.

92 On Sept.26, south of the *f*-part of the group, a one-day group of an unknown polarity spot (U+P = 2, B = -28.5°, L = 95.1°).

101 On the northern hemisphere this small group is observed farthest from the equator in 1977.

104 Return of the OLD Cycle group 90. Spots 1 and 2 of group 104 are the survivors of spots 1_1 and 2_1 of group 90. Spot 1 slowly disintegrates and disappears near the central meridian, i.e. the spot lasts for more than 33 days. Closely following the spot pair 1-2 , the bipolar "subgroup" 3-4 also rotates onto the disc. One of their new spots (3_0) emerges just within the penumbra of spot 2, and they build a classic δ-spot for a week. Finally, after separation, only spot 2 survives and passes round the west limb as the only spot of the whole group, i.e. it twice crosses the solar disc and lasts for more than 40 days.
On Oct.16, NE of the group, there is also an unknown polarity single spot of a one-day group.(U+P = 2, B = +10.1°, L = 197.7°).

continued

GROUP No

continued

In the next rotation, on Nov.7, a one-day group is observed (near the central meridian) approximately at the same heliographic coordinates as the group 104. The ephemeral little group of unknown polarity may be regarded as the revival of group 104. It consists of a single spot (U+P = 1, B = +6.3°, L = 215.1°) and a small cluster of three near-by spots (U+P = 4, B = +4.3°, L = 205.5°).

112 By Oct.19 the group abruptly develops in a one-day period and develops further while rapidly moving.
On Oct.21, W of the leader of the group, an unknown polarity single spot of a one-day group is seen (U+P = 1, B = -26.0°, L = 98.0°).

115 A multiple group where altogether six small unrelated bipolar spot pairs can be observed; the places of their emergence (with one exception) are successively shifted toward west. On Oct.29, at maximal development, all of its spots are almost in a stright line.

119 From Oct.30 to Nov.3, west of spot 1, at least one little spot of opposite polarity is observed. These ephemeral spots of *N* polarity, together with the *S* polarity spot 1_{o1} , may be regarded as a small group of inverted polarity.

123 Between Nov.9 and 11 spot 2_o moves parallelly with spot 1, i.e. quite unusually.

124 On Nov.17, SE of the group, an unknown polarity single spot of a one-day group is seen (U+P = 1, B = +34.5°, L = 75.5°).

125 Cf. group 136.

129 The group has an abrupt rise and development by Nov.17. (During the same one-day period the group 124 also develops into a δ-group in spite of the fact that they are more than 10° apart in both coordinates.)

135 An old leader enters the disc with a few close companions of the same polarity. At central meridian passage, close north of it, a new bipolar group of several small spots emerges which disappears

continued

GROUP No

continued

in a few days. The original large leader (1) alone passes round the west limb and on Dec.27 returns as spot 1 of group 153 (it crosses the solar disc a second time, slowly disintegrating, i.e. lasting for more than 39 days).

136 Spot 1 of the group, passing over the disc as a fairly stable leader, is the return of spot 1_{12} of group 125, born near the west limb and lasting more than 29 days.

140 Enters the disc in the same photospheric facular region in which group 123 and 128 emerged and passes round the west limb. The group elongated to 17 longitudinal degrees reveals an almost straight line on the disc, especially on Dec.12-13.
On Dec.10 an unknown polarity spot of a one-day group is also seen (U+P = 5, B = -23.3°, L = 123.7°).

143 The lowest latitude group in 1977. According to a polarity determination it belongs to the NEW Cycle (No 21).

147 SE of the group on Dec.16, a one-day group of two *N*-polarity spots are observed (U = 2, U+P = 10, B = -27.2°, L = 53.5° and U = 2, U+P = 9, B = -26.3°, L = 51.9°).

151-154 are not yet included in the General Catalogue of Sunspot Groups as they survive to 1978 and therefore no more notes are given here (cf. also group 135).

SUMMARIES OF RESULTS

Various Summaries and Averages

of

SUNSPOT DATA

for the Year 1977

1. General Catalogue of Sunspot Groups
2. Summary of Sunspot Activity
3. Various Averages
   - 3.1. Mean Areas and mean heliographic Latitude of Sunspot Groups
   - 3.2. Averages within 60° central meridian distance, separately given for both Magnetic Polarities, as well as for Cycles 20 and 21.

General Catalogue of Sunspot Groups

This catalogue contains particulars of every sunspot group which lasted for two or more days.

The data of groups are tabulated as follows.

GROUP No: Serial number of sunspot groups. The groups are numbered beginning with No 1 that appeared on the solar disc on January 1, 1977 (cf.p.42).

UT of CMP: Time of the central meridian passage of the group as deduced from its mean longitude. For those groups which are in existence at the time of the central meridian passage of their longitude, the time is given to 0.01^d. In other cases, in which groups disappear before or appear after the central meridian, the deduced time is given to 0.1^d.

Duration: Given in days. Intermittent groups, i.e. groups which are not seen upon the photographs for every day between their first and last appearances, are indicated by two numbers, separated by a solidus. The first represents the number of days on which they are actually observed and the second the number of days covering the extreme limits of observation.

Date, L_{CM}: Dates and longitudes from central meridian at the time of observation, for the days on which the group was first and last seen. The L_{CM} is in parentheses when a group is 80° or more from the Sun's central meridian, or in cases of close proximity to the Sun's limb when only part of the group was visible, the measures for that day are not included in deriving the mean area, the mean longitude and latitude of the group. A special marking is also given next to each data;the same markings have also been used in the Daily Results (cf.p.40).

Mean area: The mean of daily umbra (U) and whole spot (U+P) areas of the group,(corrected for foreshortening) expressed in millionths of the Sun's visible hemisphere.

Mean position: Weighted arithmetic average of the daily positions of the group, using the U+P areas as weights.

Rec.Ser.No: Reference to the Catalogue of Recurrent Series of Sunspots. The numeration restarts with No 1. The bracketed numbers indicate the order of a group of spots in the series. Rec.Ser.No 1 comprises: (1) Greenwich Group No 23733 and (2) Debrecen Group No 1.
© marks the groups belonging to the OLD Cycle (No20).

CATALOGUE OF RECURRENT SERIES OF SUNSPOTS

A Supplement (p.203) to the General Catalogue (pp.199-202)

A sunspot group is called recurrent if at least one of its spots (or well defined component of spots) passing over the west solar limb could be identified to all probability on the east limb after a full fortnight. According to this definition it is prefarable to speak about recurrent sunspots. Evidently recurrent groups are those which have one or more recurrent components and were observed in two or more consecutive apparitions.

This Catalogue contains data similar to the General Catalogue but here in each line data relate to that recurrent component of group which is indicated in the third column ("spot sign").

GROUP No	UT of CMP	Duration	First seen Date	First seen L_{CM} °	Last seen Date	Last seen L_{CM} °	Mean area U	Mean area U+P	Mean position B°	Mean position L°	Rec.Ser. No
	d	d									
1	Jan 7.6	6	Jan 1	⊢ (-81)	Jan 6	↓ -16	2	11	+ 3.7	270.8	1(2) ©
2	Dec 30.1	4	2	↑ +41	5	⊣ (+77)	25	130	+31.3	22.7	2(1)
3	Jan 10.5	2	5	↑ -68	6	↓ -53	0	2	+20.7	233.1	
4	12.18	8	11	↑ -11	18	⊣ (+86)	52	272	-28.8	210.7	
5	17.50	2	17	↑ - 3	18	↓ +14	2	17	+21.8	140.6	
6	26.7	6	21	⊢ -71	26	↓ - 6	5	17	+30.0	19.2	2(2)
7	21.7	6	22	↑ +12	27	⊣ (+72)	30	129	+24.7	85.4	
8	27.7	4	22	⊢ -68	25	↓ -31	4	19	+25.4	6.4	
9	25.0	2	23	↑ -19	24	↓ - 9	1	12	-27.8	41.3	
10	24.3	4	27	↑ +41	30	⊣ (+81)	12	56	-19.6	51.5	3(1)
11	Feb 5.01	9	30	⊢ -73	Feb 7	↓ +25	13	63	+26.1	256.9	
12	12.16	14/15	Feb 5	⊢ (-81)	19	⊣ (+83)	40	234	-41.3	162.7	
13	7.0	2	8	↑ +18	9	↓ +34	1	4	+17.6	231.4	
14	9.6	3	12	↑ +37	14	↓ +63	1	10	+15.6	196.5	
15	13.83	7	12	↑ -20	18	↓ +66	21	95	+ 3.2	140.8	©
16	12.3	2	13	↑ +14	14	↓ +25	0	4	+21.7	161.3	
17	13.70	7	13	↑ - 8	19	⊣ (+73)	10	39	+22.3	142.5	
18	20.24	13	14	⊢ -79	26	⊣ (+82)	23	143	-19.5	56.3	3(2)
19	Mar 8.51	12	Mar 2	⊢ (-81)	Mar 13	↓ +62	10	48	+17.4	202.0	
20	8.78	8/10	5	↑ -40	14	⊣ +70	9	39	+21.6	198.5	
21	19.4	2	14	↑ -68	15	↓ -56	0	4	-21.2	58.4	
22	12.7	2/3	16	↑ +48	18	⊣ +74	0	3	+22.2	147.0	
23	19.9	3	22	↑ +35	24	↓ +60	6	22	-29.5	52.1	
24	20.5	2	24	↑ +49	25	⊣ +68	0	7	+25.3	43.6	
25	31.1	6	25	⊢ -71	30	↓ -12	3	17	+24.5	264.3	
26	27.5	2	28	↑ + 8	29	↓ +23	2	11	+21.0	311.8	
27	Apr 1.1	5	Apr 1	↑ + 3	Apr 5	↓ +56	2	10	+24.8	251.7	
28	1.6	2	6	↑ +66	7	⊣ +76	5	17	+17.7	244.2	
29	18.16	14	11	⊢ (+83)	24	⊣ (+80)	38	240	-20.1	25.8	4(1)
30	15.53	5	15	↑ - 1	19	↓ +52	2	11	-25.1	60.5	
31	19.1	4	21	↑ +31	24	⊣ +68	2	15	-22.0	13.4	5(1)
32	May 2.29	9	26	⊢ -77	May 4	↓ +24	8	48	-21.3	199.2	
33	7.54	13	May 1	⊢ (-80)	13	⊣ +78	20	117	+31.9	129.7	
34	12.45	6	8	↑ -50	13	↓ +13	1	11	-24.1	64.8	
35	15.94	11	9	⊢ (-83)	19	↓ +38	16	64	-20.9	18.7	4(2),5(2)
36	7.8	4	10	↑ +36	13	⊣ +73	10	22	+20.5	126.3	
37	15.9	2	14	↑ -18	15	↓ - 9	2	12	+31.4	19.5	
38	16.89	4	14	↑ -33	17	↓ + 7	3	10	-21.5	6.1	
39	19.5	4	20	↑ +13	23	↓ +51	2	10	-26.7	331.4	
40	17.1	3	21	↑ +59	23	⊣ (+80)	1	10	+35.1	2.8	
41	31.0	3	25	↑ -72	27	↓ -48	1	7	+18.0	179.6	
42	28.63	8	28	↑ - 3	June 4	⊣ (+83)	41	204	+20.4	210.8	6(1)
43	29.30	6/8	28	↑ -13	4	⊣ +77	6	29	-22.3	201.9	7(1)
44	June 4.33	9	30	⊢ -63	7	↓ +42	9	37	+20.5	122.1	
45	8.59	13	June 2	⊢ (-81)	14	⊣ +77	41	230	-24.6	65.7	

GROUP No	UT of CMP		Duration	First seen Date		L_{CM}°	Last seen Date		L_{CM}°	Mean area U	Mean area U+P	Mean position B°	Mean position L°	Rec.Ser. No	
		d	d												
46	June	2.6	3	June 6	↑	+49	June 8	→|	+78	12	82	+19.8	145.5		
47		13.20	13	7	|→	−75	19	→|	(+83)	37	207	−21.3	4.7	8(1)	
48		14.5	2	13	↑	−12	14	↓	− 1	1	5	+34.3	347.8		
49		23.8	3	17	|→	(−81)	19	↓	−56	1	9	+25.9	224.6		
50		23.37	4/6	18	↑	−64	23	↓	+ 1	0	1	− 8.8	230.1		
51		24.88	11	18	|→	(−84)	28	↓	+46	4	10	+19.6	210.1	6(2)	
52		25.23	13	19	|→	−75	July 1	→|	(+84)	44	216	−21.4	205.5	7(2)	
53		29.74	13	23	|→	(−80)	5	→|	+76	100	677	+14.5	145.8	9(1)	
54		24.6	2	24	↑	+ 0	June 25	↓	+10	2	5	+ 3.5	214.3		©
55		24.2	2	27	↑	+57	28	↓	+67	1	9	+32.4	232.4		
56		30.34	2/3	29	↑	−14	July 1	↓	+17	0	2	+30.1	137.8		
57	July	3.7	7/12	29	↑	−57	10	→|	(+84)	13	55	+20.9	93.0		
58	June	30.7	6	July 1	↑	+13	6	→|	+74	39	205	+39.3	132.9		
59	July	8.4	5	2	|→	(−80)	6	↓	−26	3	10	+18.3	31.8		
60		10.78	11	4	|→	(−83)	14	↓	+42	13	65	−20.0	359.6	8(2)	
61		26.93	11	20	|→	(−82)	30	↓	+46	15	68	+15.6	146.0	9(2)	
62		23.75	8	22	↑	−17	29	→|	+76	6	22	+20.0	188.1	10(1)	
63		28.08	7	22	|→	−73	28	↓	+ 5	6	24	−24.1	130.8		
64		19.5	2	23	↑	+54	24	↓	+63	1	6	+20.3	244.5		
65		25.9	2/3	24	↑	−20	26	↓	+ 5	1	4	−30.3	159.2		
66		28.7	2	29	↑	+ 9	30	↓	+23	0	1	−26.5	122.2		
67		28.0	2	31	↑	+47	Aug 1	↓	+58	1	4	−20.6	131.6		
68		29.1	4	31	↑	+30	3	→|	+69	7	36	+28.7	118.0		
69		29.1	2	Aug 1	↑	+42	2	↓	+53	1	7	+21.4	116.8		
70	Aug	9.30	13	3	|→	−78	15	→|	(+81)	51	282	+24.3	329.2	11(1)	
71		6.3	2	10	↑	+56	11	→|	+71	6	16	−16.9	8.8		
72		15.89	13	10	↑	−74	22	→|	(+86)	13	59	+19.7	242.1	12(1)	
73		18.0	6	11	|→	(−85)	16	↓	−23	4	15	+30.5	214.0		
74		17.97	10	13	↑	−64	22	↓	+56	7	27	+26.8	214.5		
75		19.6	5	13	|→	(−83)	17	↓	−27	8	27	+19.1	193.3	10(2)	
76		20.8	5	16	↑	−59	20	↓	− 3	4	11	+21.8	177.2		
77		22.5	3	17	|→	−65	19	↓	−39	3	10	−27.3	154.4		
78		19.1	4	20	↑	+20	23	↓	+56	4	11	+19.6	200.1		©
79		26.74	13	20	|→	(−81)	Sept 1	→|	+66	21	84	−25.2	98.6		
80		18.5	3	21	↑	+42	Aug 23	↓	+64	4	31	−21.6	208.1		
81		21.9	4	24	↑	+32	27	→|	+74	3	15	+21.0	162.9		
82		25.3	5	27	↑	+28	31	→|	+79	8	28	+27.1	117.2		
83		31.19	6	27	↑	−48	Sept 1	↓	+10	3	10	−30.9	39.9		
84	Sept	6.49	13	31	|→	(−81)	12	→|	+76	14	83	+24.2	316.7	11(2)	
85	Aug	29.1	3	Sept 1	↑	+41	3	↓	+71	1	6	+28.0	67.0		
86	Sept	4.44	7	1	↑	−42	7	↓	+43	6	24	+15.9	343.7		
87		12.0	6	6	|→	−72	11	↓	−11	3	8	+20.0	243.9	12(2)	
88		5.4	2	9	↑	+51	10	→|	+68	2	6	−34.4	331.0		
89		14.90	12	9	|→	−72	20	→|	+76	20	103	+16.5	205.6		
90		15.49	13	9	|→	(−81)	21	→|	(+81)	130	863	+ 8.0	197.8	13(1)	©

GROUP No	UT of CMP	Duration	First seen Date	First seen L_{CM}°	Last seen Date	Last seen L_{CM}°	Mean area U	Mean area U+P	Mean position B°	Mean position L°	Rec.Ser. No
	d	d									
91	Sept 21.89	8	Sept 15	⊢ (-82)	Sept 22	↓ + 6	4	17	+24.7	113.4	
92	22.97	11	18	↑ -62	28	→| +70	56	307	-23.4	99.1	
93	19.1	4	21	↑ +28	24	→| +73	6	15	+23.3	149.9	
94	25.78	7	23	↑ -31	29	↓ +49	15	46	+28.8	62.0	
95	28.8	4	23	⊢ -70	26	↓ -33	1	6	-20.0	22.0	
96	30.0	4	24	⊢ -73	27	↓ -30	2	10	-19.9	6.8	
97	Oct 1.52	13	25	⊢ (-80)	Oct 7	→| +79	41	248	+14.7	346.3	
98	2.08	10/13	26	↑ -70	8	→| (+79)	15	77	+30.8	338.9	
99	Sept 27.0	5	27	↑ + 5	1	↓ +61	6	21	+17.7	45.9	
100	Oct 4.45	13	28	⊢ (-82)	10	→| +76	26	156	-20.9	307.6	
101	Sept 26.7	2	29	↑ +36	Sept 30	↓ +49	1	5	+42.0	50.4	
102	28.2	3	29	↑ +16	Oct 1	↓ +43	0	5	-25.7	29.7	
103	Oct 4.97	12	29	⊢ -74	10	→| +70	14	81	+20.3	300.8	
104	12.13	13	Oct 5	⊢ (-85)	17	→| +74	37	198	+ 6.7	206.3	13(2) ©
105	12.17	4/5	8	↑ -50	12	↓ + 0	0	2	+15.9	205.8	
106	15.65	13	9	⊢ (-81)	21	→| +77	35	196	+18.8	159.9	
107	14.58	7	13	↑ -17	19	↓ +67	11	39	+18.7	174.0	
108	19.42	9	13	⊢ -79	21	↓ +25	19	112	+22.3	110.1	
109	15.25	6/8	14	↑ -13	21	→| (+81)	1	6	+22.8	165.1	
110	16.49	7	16	↑ - 3	22	→| (+80)	30	142	+22.3	148.8	
111	18.0	2	18	↑ + 4	19	↓ +18	0	1	+21.9	128.5	
112	21.23	10	18	↑ -40	27	→| (+81)	44	249	-23.9	86.2	
113	24.82	4	22	↑ -31	25	↓ + 7	3	10	-25.8	38.9	
114	28.6	3	23	↑ -67	25	↓ -42	0	5	+16.7	349.7	
115	30.10	9/10	24	↑ -75	Nov 2	↓ +37	7	38	+20.9	329.3	
116	28.9	5/8	26	↑ -35	2	↓ +60	2	8	-17.9	345.4	
117	30.27	8	27	↑ -38	3	↓ +50	8	40	+31.1	327.0	
118	24.5	2	28	↑ +53	Oct 29	↓ +61	1	4	+19.2	43.0	
119	Nov 3.53	13	28	⊢ -78	Nov 9	→| +74	21	143	-23.0	270.8	
120	4.85	12	30	⊢ -76	10	→| +74	16	102	+19.9	253.5	
121	11.5	2	Nov 7	↑ -52	8	↓ -41	0	2	+23.4	166.1	
122	13.58	9/11	7	⊢ -79	17	↓ +49	5	27	+24.1	138.3	
123	13.04	9/10	9	↑ -50	18	→| +71	4	22	-23.1	145.5	
124	17.92	11	12	⊢ -70	22	↓ +53	14	95	+37.8	81.1	
125	9.6	2	14	↑ +65	15	→| +75	16	81	-24.3	190.6	14(1)
126	19.3	2	14	⊢ -63	15	↓ -53	1	11	+28.9	63.5	
127	20.3	7	14	⊢ -78	20	↓ - 5	4	21	-18.7	50.1	
128	13.6	4	15	↑ +21	18	→| +67	2	10	-24.9	138.2	
129	19.39	9	17	↑ -23	25	→| +78	39	251	+23.8	61.8	
130	21.1	2	17	↑ -47	18	↓ -35	0	1	+20.3	39.2	
131	21.7	2	17	↑ -56	18	↓ -41	2	6	+14.5	30.9	
132	19.1	2	22	↑ +44	23	↓ +56	1	6	-26.1	65.7	
133	22.0	5	23	↑ +18	27	→| +68	5	31	+24.5	27.7	
134	Dec 2.28	11	28	↑ -57	Dec 8	→| (-80)	15	87	+16.6	251.9	
135	5.84	13	30	⊢ (-81)	12	→| (+86)	35	236	-19.4	205.0	15(1)

GROUP No	UT of CMP		Duration	First seen Date		L_{CM}°	Last seen Date		L_{CM}°	Mean area U	Mean area U+P	Mean position B°	Mean position L°	Rec.Ser. No
		d	d											
136	Dec	6.37	13	Nov	30	⊢ (-81)	Dec	12	→| (+80)	43	266	-22.1	198.0	14(2)
137	Nov	29.6	3	Dec	3	↑ +51		5	→| +76	4	22	+16.4	287.2	
138	Dec	4.2	4		4	↑ + 2		7	↓ +42	6	26	+16.9	226.4	
139		7.2	2		5	↑ -23		6	↓ - 9	2	9	-26.8	187.5	
140		11.09	12		5	↑ -77		16	→| +76	47	308	-26.1	135.8	
141		6.9	4		9	↑ +31		12	→| +71	5	34	-17.1	191.0	
142		14.39	8		9	⊢ -68		16	↓ +21	16	122	+24.4	92.3	
143		9.3	2		10	↑ +13		11	↓ +27	1	16	+ 1.0	159.7	
144		16.0	4		10	⊢ -78		13	↓ -37	2	14	-22.1	70.5	
145		17.5	5		11	⊢ (-81)		15	↓ -28	4	21	+15.1	51.8	
146		17.8	5/8		12	⊢ -73		19	↓ +20	1	10	+15.6	47.7	
147		16.97	5		15	↑ -22		19	↓ +30	7	34	-23.7	58.3	
148		18.69	5/7		16	↑ -32		22	↓ +48	1	13	+14.1	35.6	
149		23.92	13		18	⊢ -75		30	→| (+81)	28	227	+22.4	326.7	
150		21.7	5		23	↑ +21		27	→| +78	17	104	-26.4	356.2	

CATALOGUE OF RECURRENT SERIES OF SUNSPOTS

Rec. Ser. No	GROUP No	SPOT SIGN	UT of CMP	Duration	First seen Date	First seen $L_{CM}°$	Last seen Date	Last seen $L_{CM}°$	Mean area U	Mean area U+P	Mean position $B°$	Mean position $L°$	Ref.
			d	d									
1	23733		Dec 11.46	11	Dec 7	-54	Dec 17	+79	31	198	+ 4.6	268.4	a) ©
	1	1	Jan 7.6	6	Jan 1	(-81)	Jan 6	-16	2	11	+ 3.7	270.8	
2	2	1	Dec 30.0	3	Jan 2	+44	Jan 4	+72	16	95	+30.8	24.4	
	6	1	Jan 26.7	6	Jan 21	-71	Jan 26	- 7	5	16	+29.9	19.2	
3	10	1_{12}	Jan 24.1	3	Jan 27	+41	Jan 29	+71	5	23	-18.6	53.3	
	18	1	Feb 20.24	13	Feb 14	-79	Feb 26	(+82)	23	141	-19.5	56.3	
4	29	1_{12}	Apr 18.05	14	Apr 11	(-83)	Apr 24	(+80)	20	130	-20.0	27.3	
	35	1	May 15.78	10	May 9	(-83)	May 18	+34	9	37	-21.0	20.8	b)
5	31	1_2	Apr 19.0	2	Apr 23	+60	Apr 24	+71	0	3	-21.0	15.2	
	35	3	May 16.1	6	May 10	-74	May 15	-10	9	33	-21.0	16.8	b)
6	42	1_{1-4}	May 28.53	7	May 28	-10	June 3	+78	31	160	+20.3	212.1	
	51	1	June 24.84	10	June 18	(-84)	June 27	+35	5	9	+19.4	210.6	
7	43	3	May 29.2	4	June 1	+43	June 4	(+81)	4	19	-21.6	202.7	
	52	1_1	June 25.21	13	June 19	-75	July 1	(+84)	25	118	-20.9	205.7	
8	47	1	June 13.18	13	June 7	-74	June 19	(+83)	36	195	-21.3	5.0	
	60	1	July 10.78	10	July 4	(-83)	July 13	+33	14	69	-19.9	359.7	
9	53	1_{12}	June 29.62	13	June 23	-78	July 5	+76	67	397	+14.3	147.4	
	61	1	July 26.92	11	July 20	(-82)	July 30	+46	15	67	+15.4	146.1	
10	62	5	July 23.6	4	July 26	+36	July 29	(+80)	3	9	+19.7	189.9	
	75	1	Aug 19.6	5	Aug 13	(-83)	Aug 17	-27	8	27	+19.1	193.3	
11	70	1_{12}	Aug 9.21	13	Aug 3	-78	Aug 15	(+81)	27	151	+23.5	330.4	
	84	1	Sept 6.43	13	Aug 31	(-81)	Sept 12	+76	11	68	+23.9	317.5	
12	72	5	Aug 15.7	3	Aug 20	+64	Aug 22	(+87)	31	140	+19.6	245.0	
	87	1	Sept 12.0	4	Sept 6	-72	Sept 9	-34	4	10	+19.8	244.3	
13	90	1_{12}	Sept 15.29	13	Sept 9	(-80)	Sept 21	(+82)	48	237	+ 8.5	200.5	©
	104	1	Oct 12.0	7	Oct 5	(-85)	Oct 11	- 8	6	27	+ 8.3	207.8	
	90	2_1	Sept 15.48	13	Sept 9	(-81)	Sept 21	(+81)	13	103	+ 6.4	198.0	
	104	2	Oct 11.98	13	Oct 5	(-86)	Oct 17	+74	6	30	+ 6.7	208.3	
14	125	1_{12}	Nov 9.5	2	Nov 14	+66	Nov 15	+77	6	36	-24.0	192.5	
	136	1	Dec 6.34	13	Nov 30	(-80)	Dec 12	(+80)	35	217	-22.2	198.4	

a) *Group 23733, according to the Greenwich Photoheliographic Results 1976: "A simple stream led by a regular spot which alone remains on Dec 16" and it was seen on Dec 7-17, 1976. In this case, as a reasonable approximation, the data for the whole group given in the Greenwich Daily Results were used.*

b) *Group No 35 may also be regarded as two or three close groups.*

Summary of Sunspot Activity

Chief features of the record for 1977 are as follows:

(1) The activity was still at a low level, although the mean daily area of sunspots rose to 303 millionths from 164 millionths in 1976 when the last minimum phase of the period of activity occurred.

(2) The largest sunspot group crossed the Sun's central meridian on September 15.49 (UT) in latitude 8°N; its mean area was 863 millionths. There were only two groups with mean areas exceeding 500 millionths.
(In both items (1) and (2) the areas relate to the visible solar hemisphere.)

(3) There were 21 spot-free days during the year.

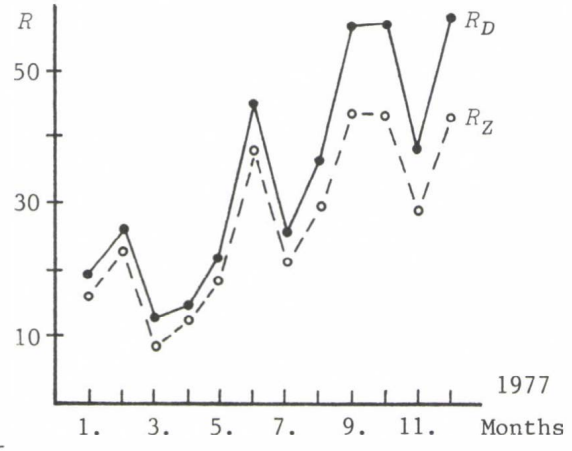
(4) The ratio of mean corrected areas of umbrae/whole spots 0.170, (i.e. the mean area ratio of penumbra/umbra 4.9 approximately).

(5) The number and distribution, northern and southern hemispheres, of sunspot groups of two day's duration or longer were as follows:

Northern spots	99
Southern spots	56
	155

(6) The following table gives for each calendar month the mean daily areas of sunspot groups (both the projected and corrected values, i.e. $(\overline{U+P})_p$ and $(\overline{U+P})_c$, respectively), the mean daily number of groups ($\bar{g}$) and the mean daily Debrecen relative sunspot number ($\bar{R}_D$).
All data of the table were calculated using the figures in the lines of calendar date in the Daily Results.

Month	$(\overline{U+P})_p$	$(\overline{U+P})_c$	$\bar{g}$	$\bar{R}_D$
January	159	140	2	20
February	310	229	2	26
March	50	40	1	13
April	154	124	1	15
May	127	101	2	22
June	743	564	3	45
July	213	181	2	26
August	272	217	3	37
September	902	669	4	57
October	676	517	4	58
November	330	246	3	39
December	794	617	4	58



The Figure shows the $\bar{R}_D$ values of the table in comparison with the Zürich relative sunspot numbers (R_Z), according to *SGD*, 1978, No.404, Part I, p.8.

Mean Daily Areas of Sunspot Groups

for each rotation of the Sun

from January 1 to December 21

in addition the mean daily number of groups (g) and
the mean daily Debrecen relative sunspot number (R_D) are also similarly given

Rotation No	Rotation Commencements UT	Number of days on which photogr. were taken	Mean daily areas corrected umbrae	corrected whole spots	projected umbrae	projected whole spots	Mean of daily g	Mean of daily R_D
1650	Dec 31.84	27	28	152	34	175	2	21
1651	Jan 28.18	28	42	231	58	314	2	27
1652	Feb 24.52	27	9	46	12	55	1	11
1653	Mar 23.84	27	16	101	21	131	1	14
1654	Apr 20.12	27	25	127	29	145	2	23
1655	May 17.35	28	44	238	58	305	2	27
1656	June 13.56	27	96	572	124	735	3	45
1657	July 10.75	27	22	110	28	135	2	20
1658	Aug 6.97	27	42	196	54	253	4	41
1659	Sept 3.21	28	118	708	155	957	4	58
1660	Sept 30.48	27	97	543	132	718	4	59
1661	Oct 27.77	27	45	289	64	405	4	46
1662	Nov 24.08	28	77	513	100	650	4	51
For the year 1977		365	52	303	68	393	3	35

The mean areas have been formed by taking the means of the areas for each day of observation throughout each rotation of the Sun, the projected areas being the areas as measured on the photographs and expressed in millionths of the Sun's apparent disc, and the areas corrected for foreshortening being expressed in millionths of the Sun's visible hemisphere.

The numeration of the used synodic solar rotation is in continuation of Carrington's series (cf. the bottom of p.37).

Concerning g and R_D see p.41.

Mean Heliographic Latitude of Sunspot Groups

for each rotation of the Sun
from January 1 to December 21

Rotation No	Rotation Commencements UT		Number of days on which photogr. were taken	NORTHERN SPOTS		SOUTHERN SPOTS		ALL SPOTS	
				Mean daily area	Mean heliogr. LATITUDE	Mean daily area	Mean heliogr. LATITUDE	Mean heliogr. LATITUDE	Mean DISTANCE from Equator
1650	Dec	31.84	27	50	+26.04	102	-26.90	- 9.38	26.62
1651	Jan	28.18	28	56	+15.36	175	-33.29	-21.55	28.96
1652	Feb	24.52	27	38	+19.02	8	-21.99	+11.49	19.57
1653	Mar	23.84	27	8	+23.21	93	-20.42	-16.94	20.64
1654	Apr	20.12	27	57	+31.21	71	-20.71	+ 2.43	25.39
1655	May	17.35	28	74	+20.44	164	-23.24	- 9.71	22.38
1656	June	13.56	27	406	+17.77	166	-21.26	+ 6.47	18.78
1657	July	10.75	27	98	+21.79	12	-22.65	+16.93	21.89
1658	Aug	6.97	27	151	+23.18	45	-25.08	+12.07	23.62
1659	Sept	3.21	28	567	+11.33	141	-23.03	+ 4.50	13.65
1660	Sept	30.48	27	402	+17.52	140	-22.71	+ 7.11	18.86
1661	Oct	27.77	27	196	+25.95	93	-22.74	+10.32	24.92
1662	Nov	24.08	28	137	+20.13	376	-22.73	-11.29	22.03
For the year		1977	365	175	+18.18	128	-23.67	+ 0.52	20.50

The heliographic latitude of each sunspot group for each day has been multiplied by its area (corrected for foreshortening), and the sum of the products, for groups north of the equator, has been divided by the sum of the corresponding areas to form the mean heliographic latitude of spotted area north of the equator; similarly for groups south of the equator. In forming the mean heliographic latitude of entire spotted area, the algebraic sum of the products for groups north and south of the equator has been divided by the sum of the areas; for the mean distance from the equator of all groups, the numerical sum of the products, without regard to the sign of latitude, has been similarly divided.

The mean areas have been formed by dividing the sum of the daily areas (corrected for foreshortening) by the number of days of observation for each rotation of the Sun and are expressed in millionths of the Sun's visible hemisphere.

AVERAGES WITHIN 60° CENTRAL MERIDIAN DISTANCE

MEAN DAILY AREAS AND MEAN HELIOGRAPHIC LATITUDE OF SUNSPOT GROUPS

separately given
for the Year and for each solar Rotation,
for both magnetic Polarities and for Cycles 20 and 21

All relevant daily data of groups were used, when the observed daily position of the group was within 60° of the central meridian, more exactly within (sin 60° =) 0.867 radius of the solar disc.

Both the mean daily areas and the mean heliographic latitudes were similarly calculated as the data in the previous table (on p.206).

In the third column the number between solidi gives the number of days when groups lasting for two or more days were not seen at all.

During 1977: on the SOUTHERN solar hemisphere not a single group of Cycle 20 was observed; on the NORTHERN hemisphere six groups of the old cycle were observed and each one occurred within a different rotation. The number of days on which the group was observed within the 60° limit are also given (in parentheses).

Y E A R	Number of days on which photogr. were taken	C Y C L E No 21 NORTHERN SPOTS Mean daily area U	U+P	Mean heliogr. LATITUDE	SOUTHERN SPOTS Mean daily area U	U+P	Mean heliogr. LATITUDE
1977	365 /24/	18	97	+20.95	16	94	-24.04
	p	*12*	*68*	*+20.65*	*12*	*70*	*-23.20*
	f	*5*	*29*	*+21.64*	*4*	*23*	*-26.56*

In the first line the data of whole groups, while in the two consecutive lines the data of the preceding (*p*) and following (*f*) parts of groups are given.

Rotation No	Rotation commencements UT	Number of days on which photogr. were taken	CYCLE No 20 NORTHERN SPOTS Mean daily area U	U+P	Mean heliogr. LATITUDE	CYCLE No 21 NORTHERN SPOTS Mean daily area U	U+P	Mean heliogr. LATITUDE	CYCLE No 21 SOUTHERN SPOTS Mean daily area U	U+P	Mean heliogr. LATITUDE
1650	Dec 31.84	27 /6/	0	1	+ 3.78	6	26	+25.37	14	73	-26.84
	p	*0*	*0*	*1*	*+ 3.78*	*4*	*17*	*+25.32*	*9*	*53*	*-26.11*
	f	*0*	*0*		-	*2*	*9*	*+25.46*	*4*	*19*	*-28.83*
				(4)							
1651	Jan 28.18	28	5	24	+ 3.15	6	27	+24.57	23	134	-34.05
	p	*4*	*15*	*+ 3.94*	*3*	*15*	*+23.70*	*16*	*94*	*-31.31*
	f	*2*	*8*	*+ 1.73*	*2*	*13*	*+25.53*	*7*	*40*	*-40.46*
				(6)							
1652	Feb 24.52	27 /7/				6	29	+19.30	1	2	-29.07
	p					*1*	*2*	*+20.41*	*0*	*2*	*-28.33*
	f					*6*	*27*	*+19.21*	*0*	*1*	*-30.74*
1653	Mar 23.84	27 /4/				1	5	+23.82	10	63	-20.29
	p					*0*	*2*	*+23.80*	*9*	*56*	*-20.07*
	f					*0*	*2*	*+23.81*	*1*	*7*	*-21.79*
1654	Apr 20.12	27 /1/				7	34	+31.05	10	47	-20.70
	p					*5*	*27*	*+31.42*	*9*	*44*	*-20.56*
	f					*2*	*7*	*+29.66*	*0*	*4*	*-22.31*
1655	May 17.35	28 /1/				10	42	+20.41	24	133	-23.42
	p					*7*	*28*	*+20.30*	*17*	*94*	*-23.22*
	f					*3*	*14*	*+20.64*	*7*	*38*	*-23.87*
1656	June 13.56	27	0	0	+ 3.50	46	292	+16.86	24	123	-21.25
	p	*0*	*0*	*0*	*+ 4.60*	*33*	*217*	*+16.43*	*21*	*106*	*-21.04*
	f	*0*	*0*	*0*	*+ 2.70*	*13*	*75*	*+18.18*	*3*	*17*	*-22.46*
				(2)							
1657	July 10.75	27 /5/				14	67	+21.61	2	9	-22.35
	p					*10*	*45*	*+20.09*	*2*	*8*	*-21.79*
	f					*3*	*23*	*+24.54*	*0*	*2*	*-25.14*
1658	Aug 6.97	27	1	2	+19.57	20	95	+24.03	10	39	-25.36
	p	*0*	*0*	*0*	*+19.89*	*14*	*66*	*+23.81*	*5*	*22*	*-24.81*
	f	*0*	*1*	*1*	*+19.49*	*5*	*29*	*+24.55*	*4*	*17*	*-26.11*
				(4)							
1659	Sept 3.21	28	41	277	+ 8.04	29	144	+18.72	21	110	-23.18
	p	*27*	*176*	*+ 8.53*	*17*	*86*	*+18.78*	*12*	*65*	*-22.89*
	f	*13*	*101*	*+ 7.24*	*12*	*58*	*+18.66*	*9*	*45*	*-23.60*
				(9)							
1660	Sept 30.48	27	11	56	+ 6.80	42	218	+20.53	20	114	-22.72
	p	*5*	*30*	*+ 7.66*	*36*	*193*	*+20.05*	*16*	*93*	*-22.29*
	f	*5*	*26*	*+ 5.80*	*6*	*25*	*+24.26*	*4*	*21*	*-24.67*
				(8)							
1661	Oct 27.77	27				27	165	+25.50	9	58	-22.50
	p					*16*	*89*	*+26.13*	*8*	*51*	*-22.57*
	f					*11*	*75*	*+24.70*	*1*	*7*	*-21.95*
1662	Nov 24.08	28				12	78	+20.79	44	282	-23.19
	p					*9*	*61*	*+21.26*	*34*	*210*	*-22.43*
	f					*2*	*17*	*+19.13*	*10*	*72*	*-25.44*

On the NORTHERN hemisphere in Cycle No 21 the *p*-spots are the *N* polarity spots.

PUBLICATIONS OF DEBRECEN HELIOPHYSICAL OBSERVATORY
Heliographic Series No.1

APPENDICES 1-3

PUBLICATIONS OF DEBRECEN HELIOPHYSICAL OBSERVATORY
Heliographic Series No.1
Appendix 1

Ágnes Kovács

A COMPARISON BETWEEN GREENWICH AND DEBRECEN MEASUREMENTS OF SUNSPOT POSITIONS

1. INTRODUCTION

As a possibility was given for us to examine some original Greenwich heliograms, an opportunity has also been offered to check whether the "Photoheliographic Results" of Debrecen can be regarded in respect of sunspot positions as a homogeneous continuation of those of the Greenwich. Therefore some comparisons were made between Greenwich and Debrecen measurement data. Thus spot positions on original Greenwich and Debrecen plates were remeasured using our method in Debrecen. The outcome of this test is indicated here through some examples and, in addition, our present-day accuracy in position measurements is illustrated, too.

2. MEASUREMENTS ON GREENWICH AND DEBRECEN PLATES

The Royal Greenwich Observatory loaned us 39 original heliograms which were used for its Photoheliographic Results. The selected 27 and 12 daily photographs of the solar image (of 19 cm diameter) have been choosen from such a day on which we also had our own observations and were taken in the periods of January - July 1968 and July - November 1971, respectively. In this material of observation one third of the sunspot groups (91) are groups of a single spot and in addition 5 principal spots of a group were also a separated single spot. At the same time, each one of the spots consisted of not more than a single umbra. Thus, in the 39 plates a total of 96 single spots were available for our purpose of comparison. More than two-thirds of the plates contained two or more such a single spots.

I. First the positions of all 96 single spots were measured by three persons with the method used in Debrecen and the three sets of heliographic coordinates determined have been utilized to make a comparison. The measurements were carried out by the author and two of her colleagues, Lidia Gesztelyi and I.Nagy. The deviations of Gesztelyi's data from that of the author are shown in Figure 1. It is to be seen that the measurements are in good agreement and obviously the scatter of the data are slightly larger only in longitude near the solar limb. A similar comparison using Nagy's measurements have almost the same result. Therefore, in the following, the author's measurements are used exclusively.

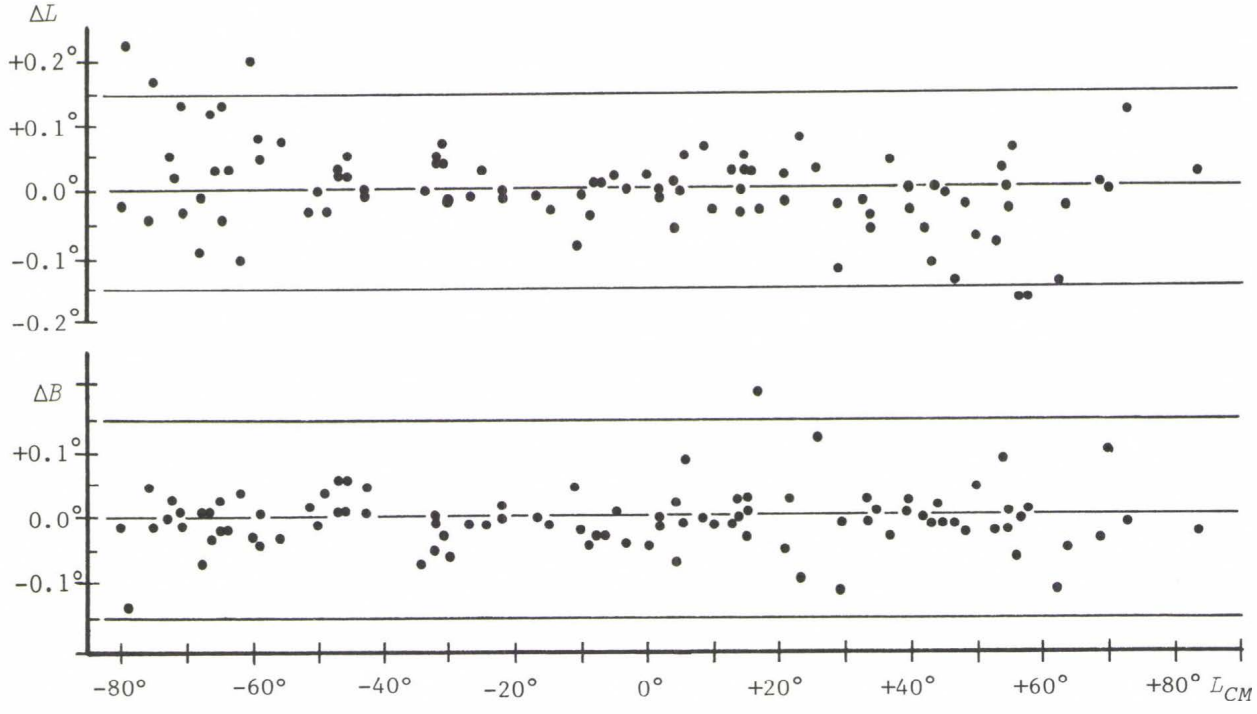


Fig.1 The differences in heliographic longitudes (ΔL) and latitudes (ΔB) of single spots between two sets of independent measurements on Greenwich plates. The differences are plotted according to longitude from central meridian (L_{CM}). (Cf. also Table 1.)

II. The deviations of the author's measurements of Greenwich plates from the published Greenwich measurements are plotted in Figures 2 and 3. (It should be mentioned that the Greenwich data are given to one decimal place, while that of the Debrecen to two decimal places.) The author's data are exactly the same as the ones used in Figure 1. Only in ten cases

are the deviations in one of the coordinates larger than |0.30|°. These ten pairs of deviation are marked with arrows (↑ or ↓) and among them those of >|0.30|° are only indicated on the lines of |0.30|°. Out of the ten spots three were tiny, indistinct and very faint, while the other seven were large asymmetric spots (of U > 20; as seen in Fig.3). Since the results of the three Debrecen measurers agreed with one another, it became quite clear that the few larger discordances arose from the fact that in Debrecen we measured the position of the umbra, while the Greenwich position relates to the centre of gravity of the whole spot. This view is supported by the following: among the used 96 spots, eleven other were found that also revealed some slighter asymmetry and therefore their positions relating to the centres of gravity of the whole spots were determined, too. Indeed there were differences between the two kinds of positions, however, they were not larger than ±0.1°. (Of course in Figure 2 the umbra positions are given as anywhere else, too.)

Table 1

The rough probable discordance in heliographic coordinates between different sets of measurements of sunspot positions

Sets		Coordinate differences and their frequency distribution in percentages								σ	Number of spots available
		±0.1°	-0.3°	-0.2°	-0.1°	0.0°	+0.1°	+0.2°	+0.3°	[°]	
I.	ΔB	99	0	0	13	76	10	1	0	0.05	96
	ΔL	95	0	2	13	67	15	3	0	0.07	
II.	ΔB	92	1	1	26	38	28	5	1	0.09	86
	ΔL	81	2	5	21	38	22	11	1	0.11	
III.	ΔB	74	4	12	22	30	22	9	1	0.13	85
	ΔL	72	2	12	22	28	22	10	4	0.13	

Measurements carried out { I. by two persons (cf.Fig.1)
II. in Greenwich and Debrecen on Greenwich plates (cf.Fig.2)
III. on Greenwich and Debrecen plates in Debrecen

(σ : the standard deviation of the distribution)

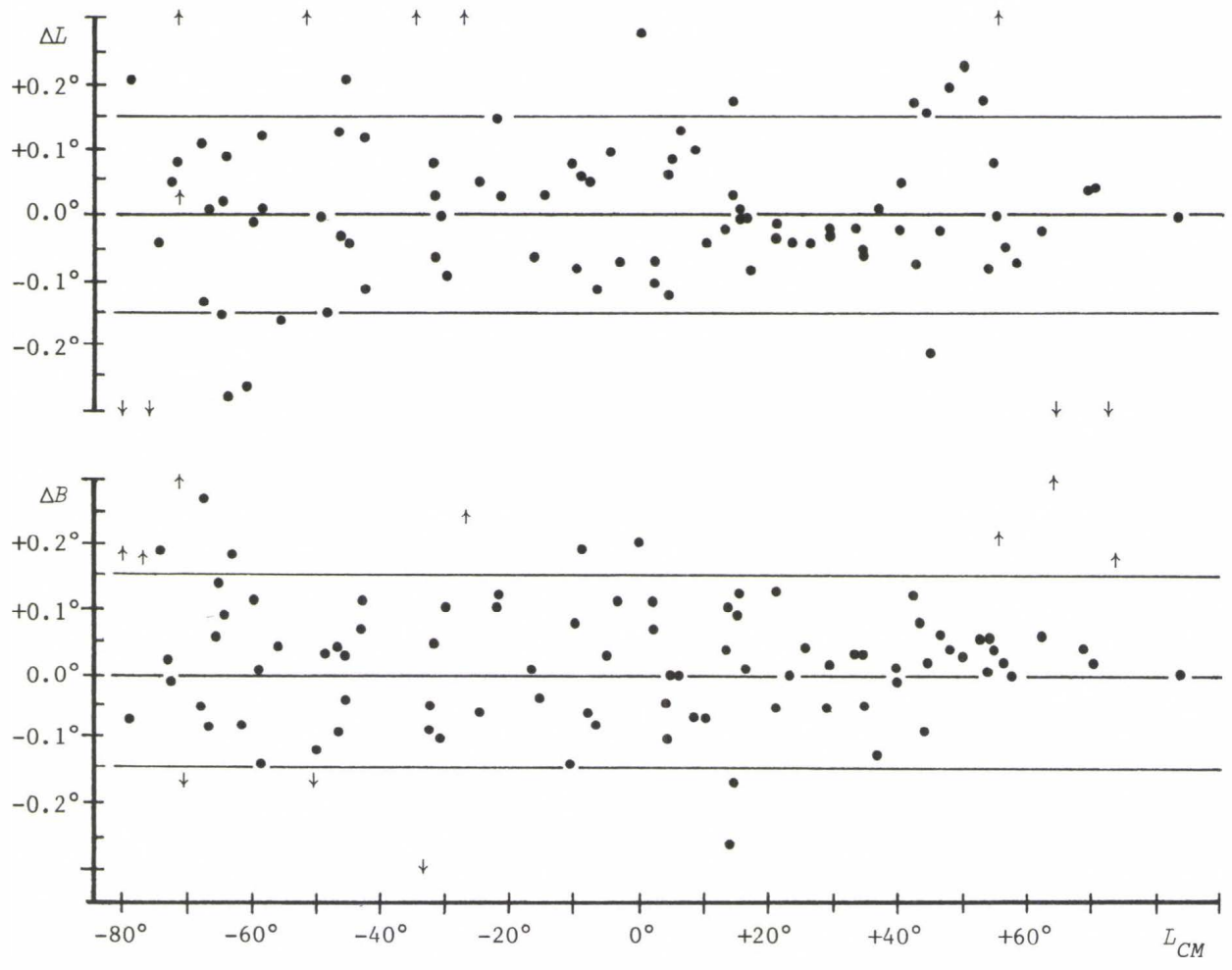


Fig.2 The heliographic coordinate differences between Greenwich and Debrecen measurements of single spots measured on Greenwich plates.
(The data are plotted as in Fig.1, concerning the arrows see the text. Cf. also Table 1.)

III. For comparison between Debrecen measurements on Greenwich and Debrecen heliograms the same 96 single spots were used as in the foregoing. The dispersion of the deviations are fairly similar to the ones shown in Figure 2; however, the scatter is a little larger. This stands to reason as the Greenwich and Debrecen observations on the same day were mostly taken with a great time difference, less than 20% occurred within one hour and even in 10% the time difference was more than 4 hours. Consequently, the general intrinsic proper motion of the spots could also have an effect on this comparison, notwithstanding that in nine cases we learned from additional Debrecen heliograms which one of the spots had indeed a considerable motion.

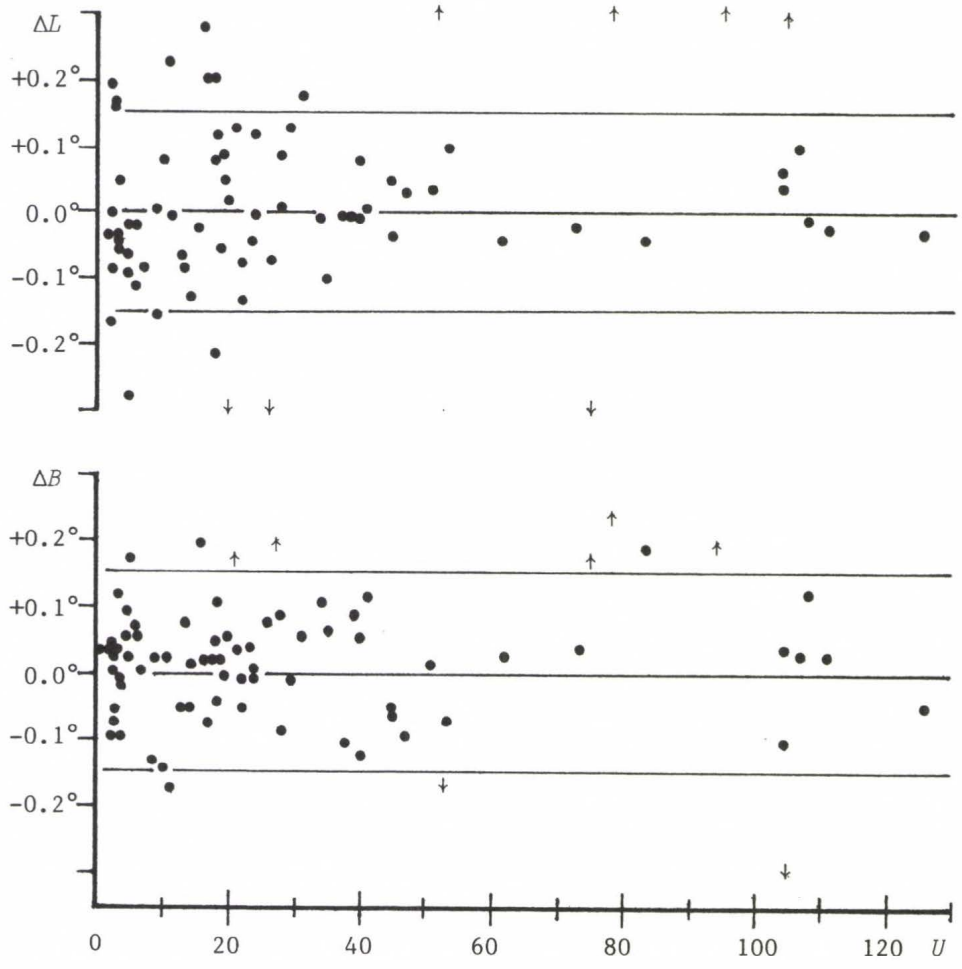


Fig.3 The heliographic coordiante differences ΔL and ΔB *versus* umbra areas of the U ≥ 2 single spots given in Figure 2.
(The U areas in 10^{-6} of the visible solar hemisphere.)

The main results of the comparisons (I-III) are summarized in Table 1. Disregarded here are those ten spots in statistical sample II which most probably could not be measured unambiguously and in sample III those two ephemeral one-day spots that were not visible on Debrecen plates, as well as the nine spots of rapid motion (out of them, four are the same which were also disregarded in sample II).

In spite of the fact that from a statistical point of view the distributions in Table 1 are only on the basis of a limited number of data, one thing is certain: there can not be any real objections relating to the accuracy of the Debrecen spot positions as compared to those of Greenwich. On the other hand, notwithstanding that the measurements are slight in number, it should be emphasized that the data sets tested are "true" statistical samples.

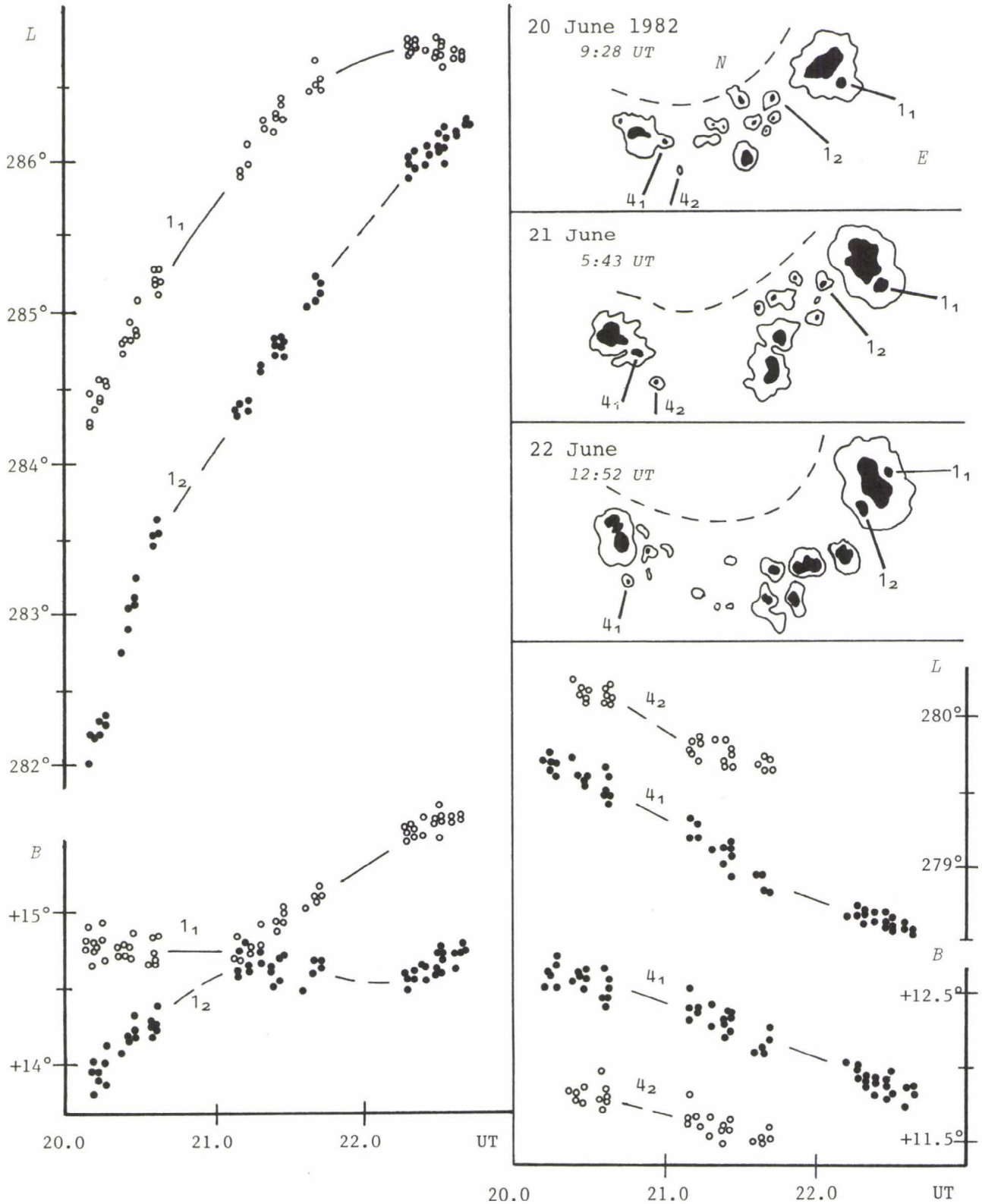


Fig.4 Heliographic coordinates *versus* time of four umbrae in a three-day period. The umbrae are members of a large sunspot group in Hale rgn.No 18430. In the drawings, only the SW part of the group is visible. (The diameter of the plotted circles is about 0.03°.)

3. ON THE ACCURACY OF OUR POSITION MEASUREMENTS

In order to show by simple means the probable errors in our data of positions, the results of some series of measurements, made on a number of heliograms taken over a daily observational period of several hours, are given in Figure 4, where each plot represents a single observation. These data form an unpublished part of an investigation on the development of sunspot groups {Á.Kovács and L.Dezső, Sunspot motion in Hale region No 18430, *Contr. Astr.Obs.Skalnaté Pleso, Vol.15*, Part 1, pp.103-110 = *Heliophys.Obs.Debrecen, Preprint No.9*, 1986}.

It is easy to see that all the heliographic coordinates given in Figure 4 lie within a 0.3°- wide zones. Thus, in general, we may estimate the probable error of the positions in both coordinates approximately as ±0.1°. If there are a sufficient number of observations, of course, then it is possible to reliably give a mean position in heliographic degree to two decimal places, as well. (This is the reason for our using, as a rule, the coordinates two decimal places as given in Figures 1-4.)

Consequently, on the basis of the foregoing (and of our other similar experience) it may be said that the heliographic coordinates in the *Debrecen Photoheliographic Results*, measured on a daily single heliogram, could not have generally an error larger than 0.2°.

The author thanks Lidia Gesztelyi and I.Nagy for measuring the 39 Greenwich plates.

PUBLICATIONS OF DEBRECEN HELIOPHYSICAL OBSERVATORY
Heliographic Series No.1
Appendix 2

O. Gerlei

MEASUREMENTS OF SUNSPOT AREAS USING VIDEO FACILITIES IN DEBRECEN AND COMPARISONS TO SOME PUBLISHED GREENWICH DATA

1. THE DAREAL AND THE METHOD OF MEASUREMENT

The instrument is constructed to measure sunspot areas on photoheliograms by means of video techniques. The instrument, called by us in brief DAREAL, is outlined in Figure 1. A portion of the Sun's disc, with the spot to be measured, is projected through a magnifying lens system in a suitable enlargement to the photo-target of a TV-camera. The image of a portion of the Sun's disc can be examined on the screen of a TV-monitor, where the diameter of the solar disc is between 2 to 4 m in general. During the measurement of an umbra (or a whole spot) the brightness and contrast of the solar TV-image should be adjusted in such a way that the boundary of the umbra (or the spot) should look as it would by visual inspection of the original negative. The DAREAL enables us to select different portions of a sunspot group for measurement using a quadratic line, variable in size and position, as seen in Figure 2.

Over the image on the screen of the monitor it is possible to form any isodensity line of interest. The first phase and at the same time the essentials of the measurement is to find that isodensity contour which best fit to the boundary of the umbra (or the whole spot) area to be measured. Blinking contours makes it easier to fill this requirement.

In the second phase of the measurement, the actual determination of the area, within the contour picked out, takes place by means of an electronic counter. In approximately less than a half second the mean of ten automatic measurements appears on the digital display in arbitrary units. The principle of the measurements is shown in Figure 2. The measurement itself corresponds to the counting of the units of a quadratic network line by line.

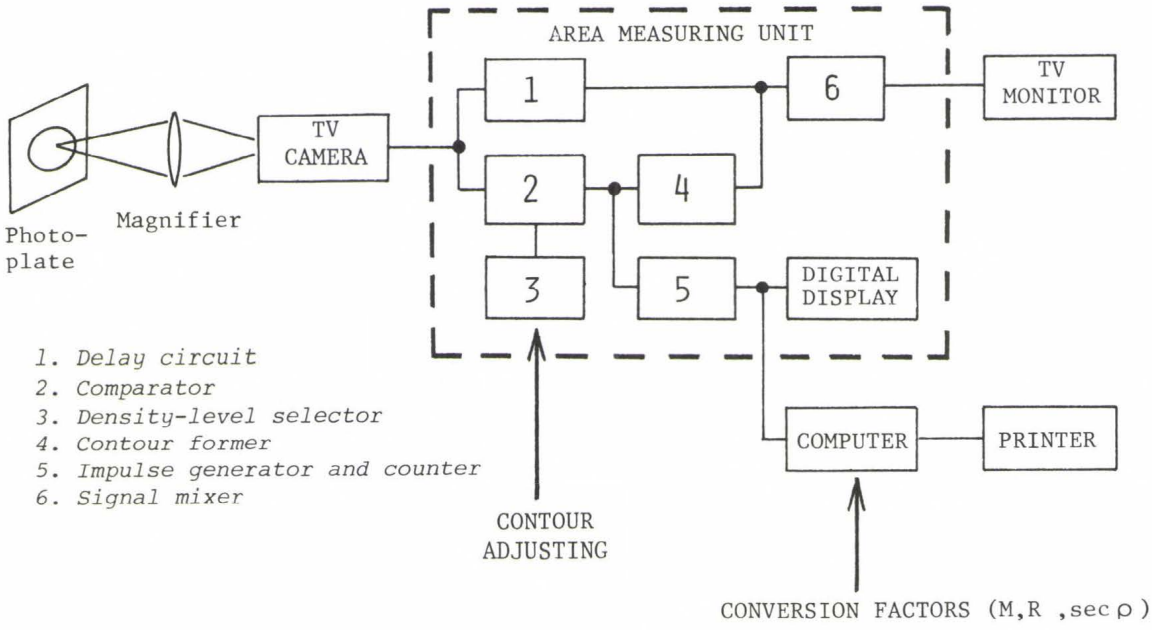


Fig.1 Schematic diagram of the Debrecen Area Measuring Instrument (DAREAL) (For the conversion factors M, R and sec ρ see the text.)

To get the areas in mm² an etalon, a predetermined area of a photographic (negative) image of a circle in mm², is also measured. The ratio of area of the etalon expressed in mm² and in the arbitrary units of the DAREAL is the *M* conversion factor. Knowing this *M*, as well as the radius of the Sun's disc in the heliogram (*R*) and the angular distance of the measured spot from the middle of the visible solar hemisphere as viewed from the centre of the Sun (ρ) the areas are recorded by means of a computer, expressed in millionths of the apparent Sun's disc and in millionths of the visible solar hemisphere.

Acknowledgements are due to Prof.G.Csikai who has given the possibility to make and to Drs. L.Vasvári, T.Sztaricskai and T.Schalbert who have carrying into effect the DAREAL at the University Institute of Experimental Physics in Debrecen.

2. THE SPOTS USED FOR CHECKING THE MEASUREMENTS

In order to test the DAREAL and at the same time to make a comparison between the Greenwich and Debrecen area measurements, two (*I* and *II*) independent sets of separated single spots were used.

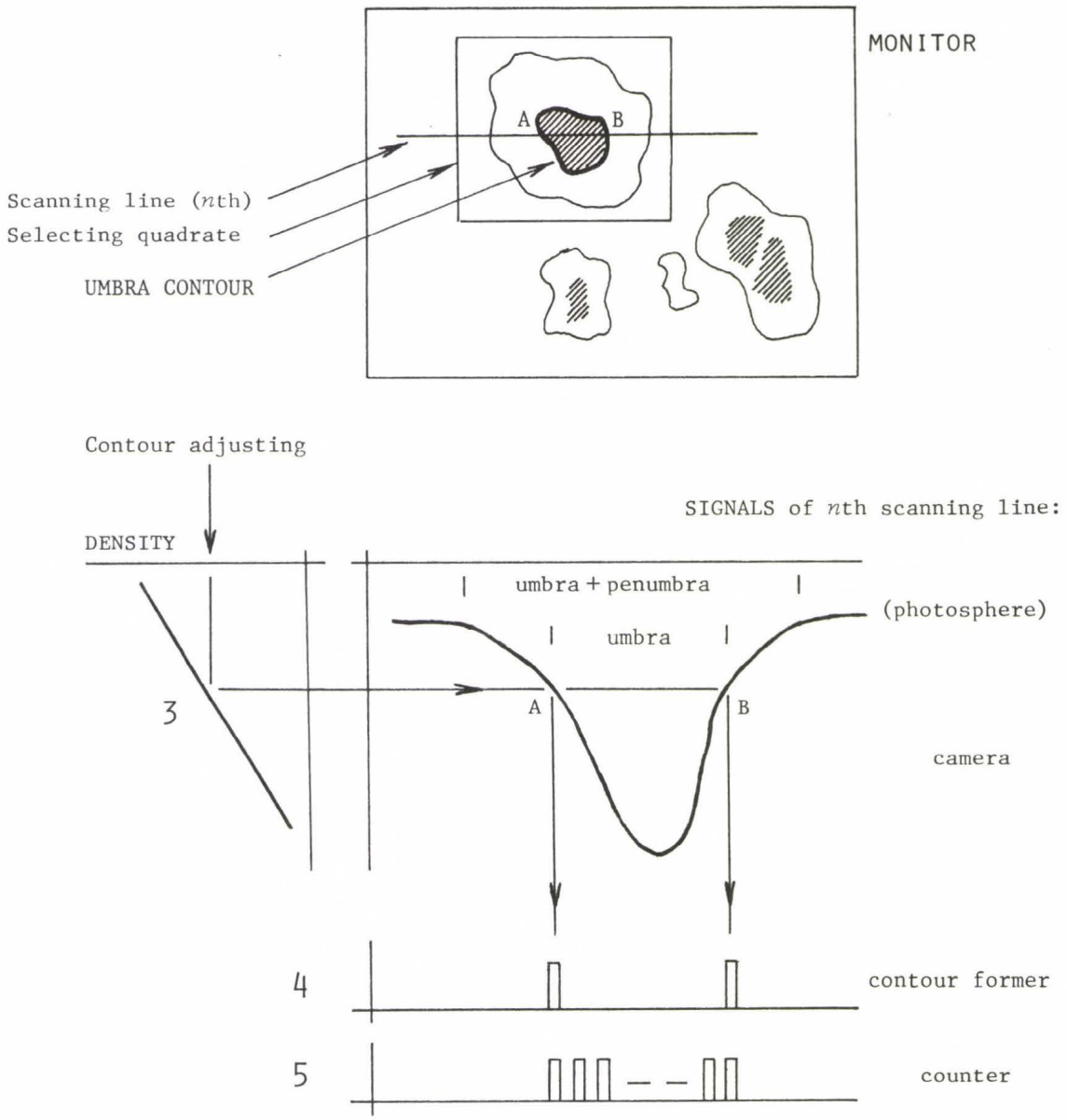


Fig.2 The working process of the DAREAL. (For explanation, see the text,cf.also Fig.1.)

I. Out of the material of observations obtained in Debrecen in the summers of 1966-1969 and 1971, the areas of almost 100 single spots of variable size were measured. More than half of the measurements relate to such instances when one spot itself comprised the whole group, while in other cases the measured spot was the largest spot of the group; however, their area data are also separately given in the *Greenwich Photoheliographic Results (GPHR)*. These spots belonged to 16 sunspot groups within 76° central meridian distance.

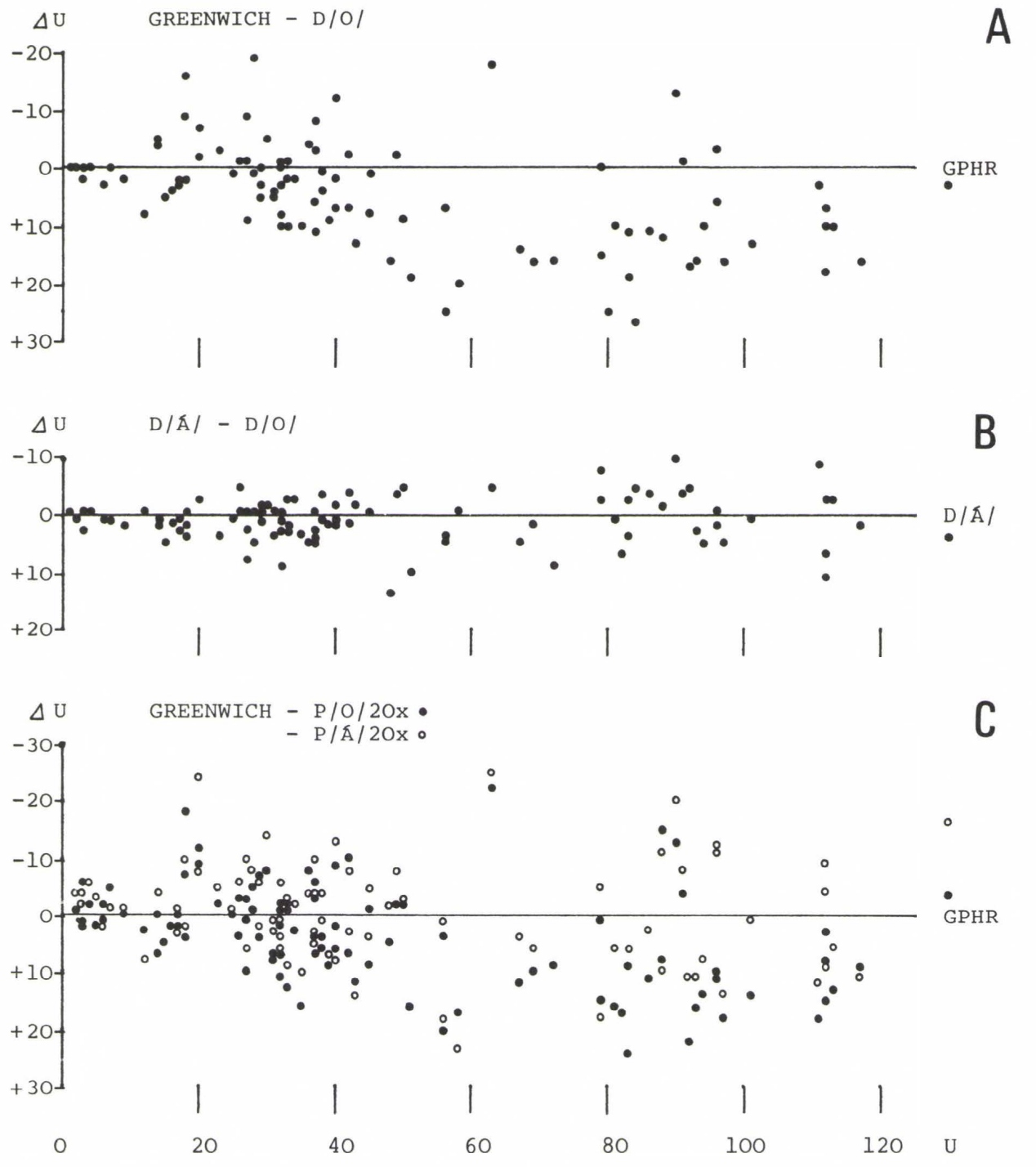


Fig.3.*I* Various sets of differences in umbra area measurements (ΔU) *versus* umbra area (U), in *sample I*.

A - Differences between published Greenwich data (GPHR) and DAREAL measurements (D) on Debrecen plates.

B - Differences between DAREAL measurements of two measurers /Á/ - /O/ on the same Debrecen plates.

C - Two sets of differences between published Greenwich data (GPHR) and PLANIMETER measurements (P) on (twenty times enlarged) projected drawings of Debrecen plates.

Continued on next page

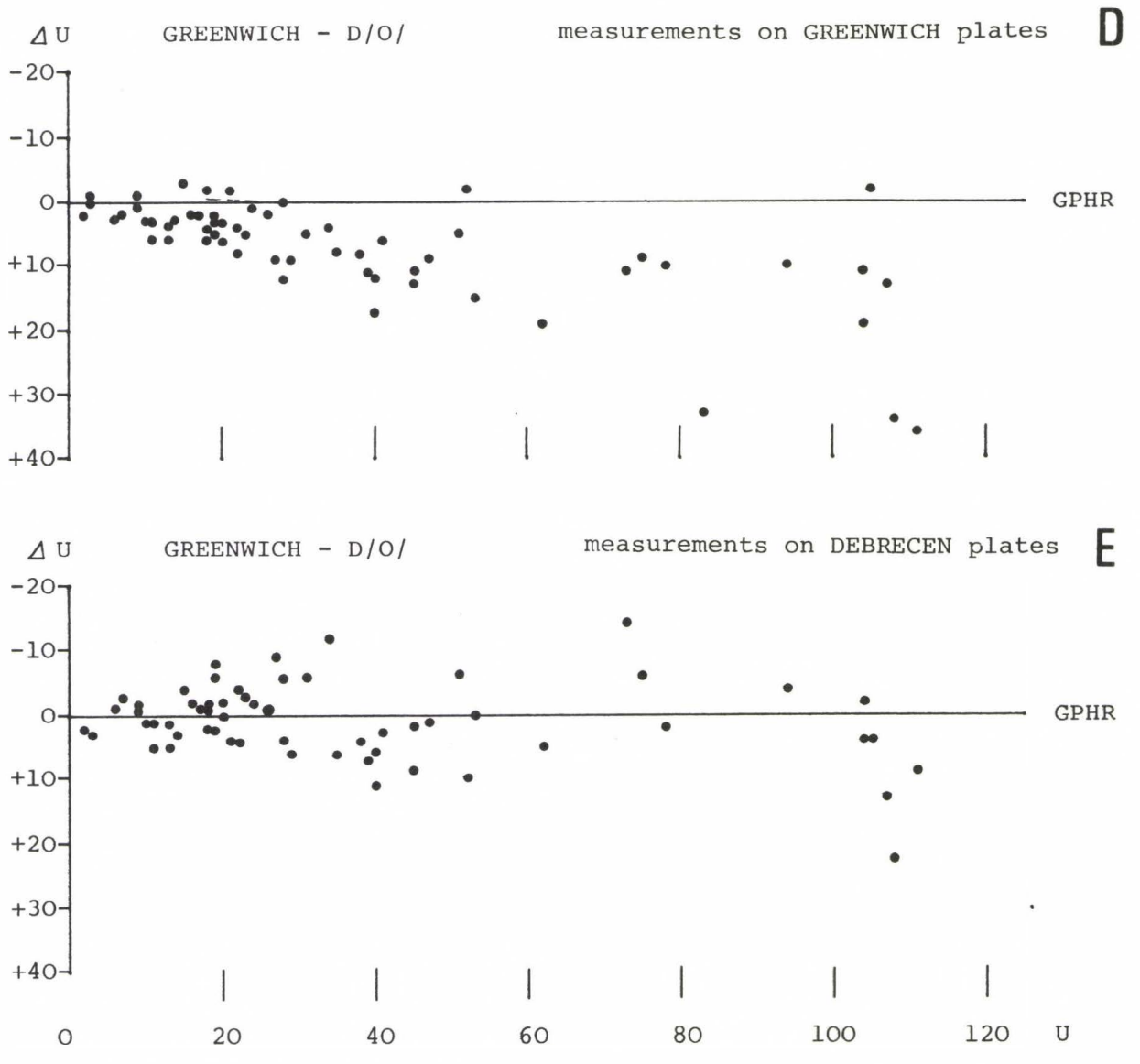


Fig.3.*II* Two sets of differences in umbra area measurements (ΔU) *versus* umbra area (U), in *sample II*.

D - Differences between published Greenwich data (GPHR) and DAREAL measurements (D) on Greenwich plates.

E - Differences between published Greenwich data (GPHR) and DAREAL measurements (D) on Debrecen plates.

For additional explanation, see caption of Fig.3.*I*.

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continued of caption of Fig.3.I.

/O/ and /Á/ indicate the initials of O.Gerlei and Á.Kovács who carried out the measurements.

The areas on the abscissa axis are recorded according to the published Greenwich data.

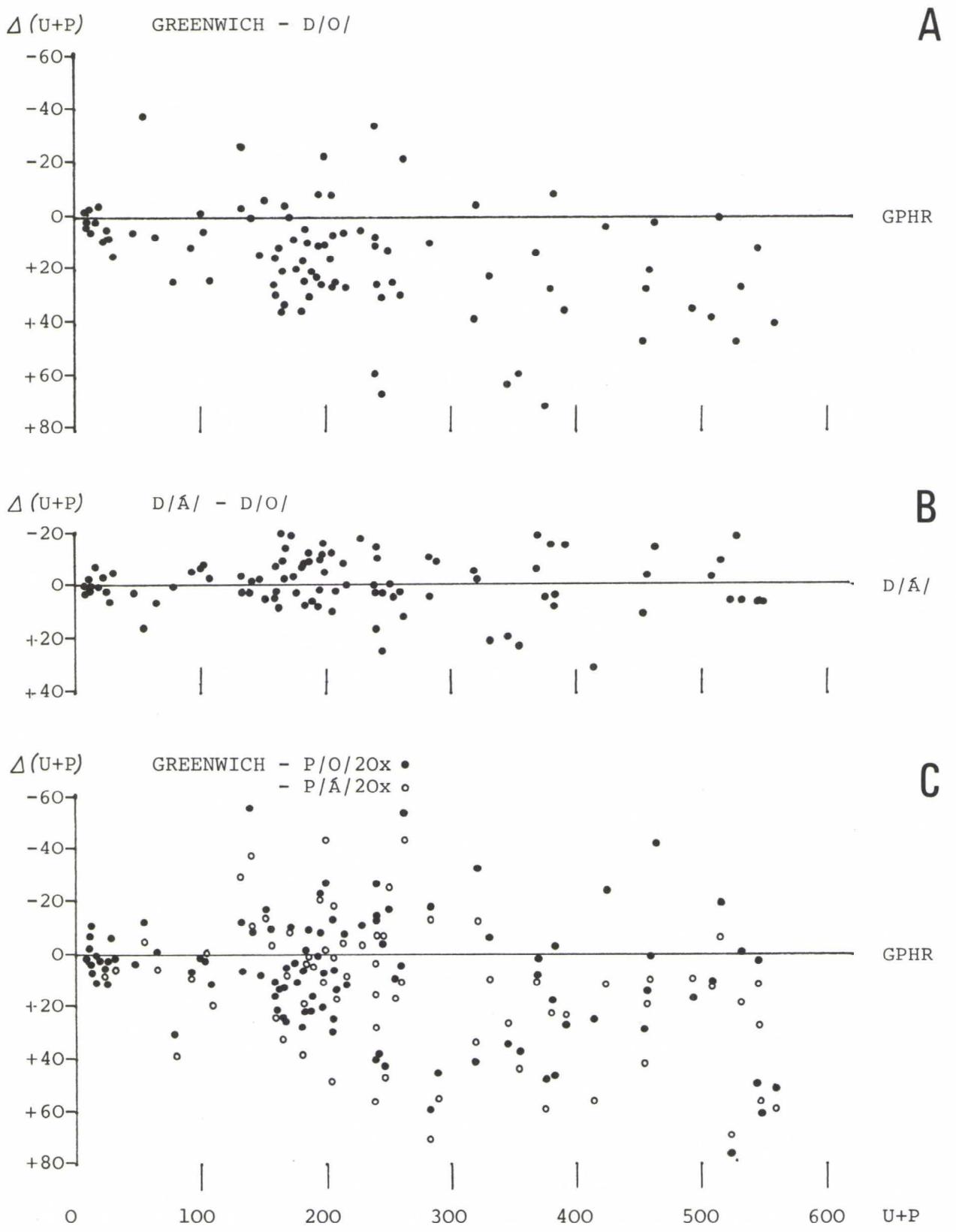


Fig.4.*I* Various sets of differences in umbra+penumbra (i.e.whole spot) area measurements [Δ(U+P)] *versus* umbra+penumbra area [(U+P)], in *sample I*.
Further explanation see in caption of Fig.3.*I*.

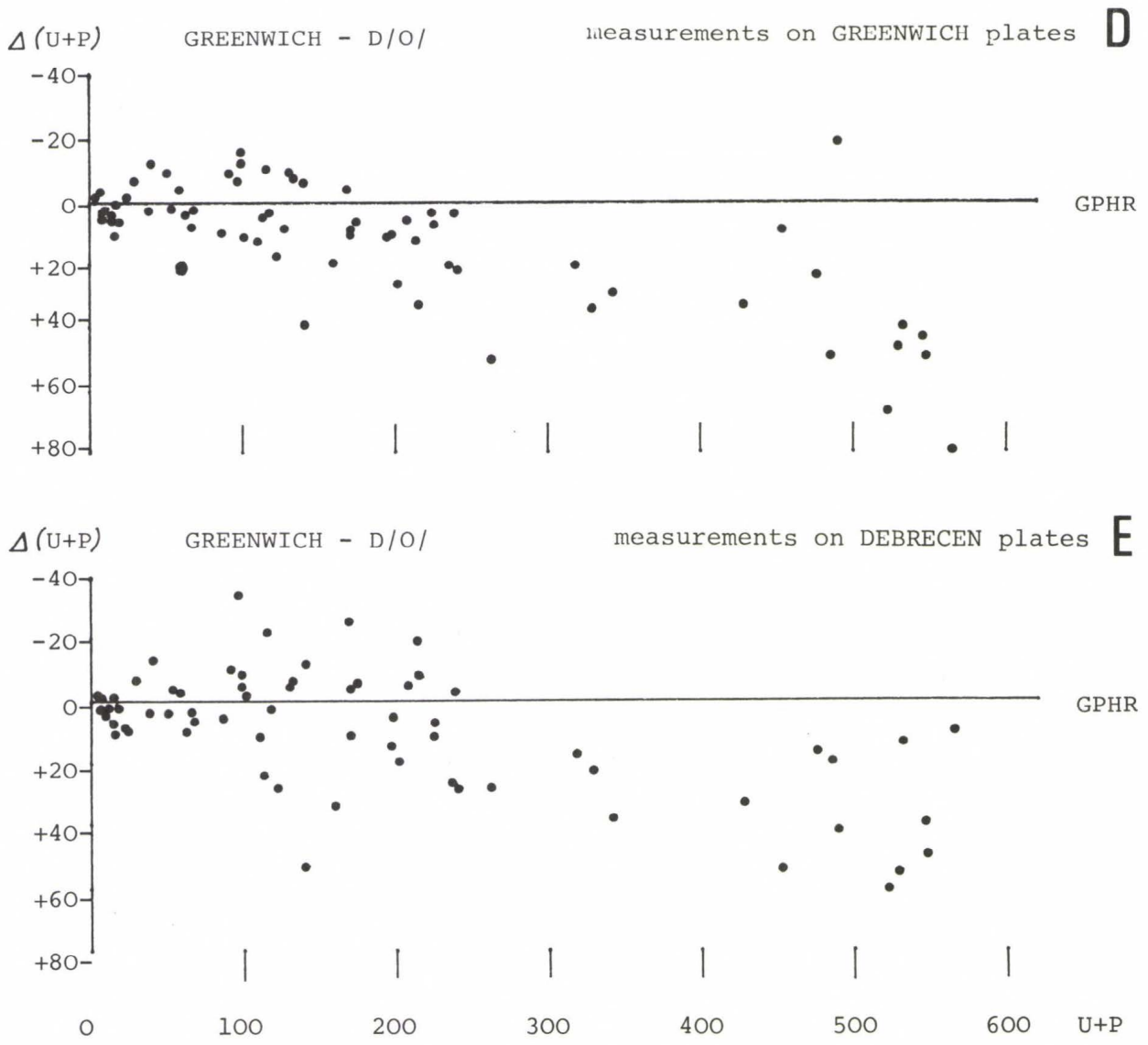


Fig.4.*II* Two sets of differences in umbra+penumbra (i.e. whole spot) area measurements [Δ(U+P)] *versus* umbra+penumbra area [(U+P)], in *sample II*.
Further explanation see in caption of Fig.3.*II*.

II. The second set consisted in two thirds of those 96 single spots which were also used in Kovács's paper relating to the data on positions (pp. 211-215). For these area measurements only such spots were utilized that have had a defect-free image on both the original Greenwich and Debrecen heliograms.

The diameter of the solar images in the Greenwich and Debrecen heliograms used here are 19 and 10 cm, respectively.

3. A COMPARISON BETWEEN GREENWICH AND DEBRECEN MEASUREMENTS

Unfortunately there were not enough spots available to make comparison between the Greenwich and Debrecen area measurements on the basis of an exact statistical analysis. For this purpose only those separated single spots are suitable which have Greenwich measurements published. Therefore, to be able to form a judgement on the comparison in question it is appropriate to show in Figures 3 and 4 in some detail the immediate results of our area measurements. All plots of the DAREAL measurements given in these Figures are the means of five successive measurements, i.e the fitting of contours took place five times.

According to parts A and E of Figures 3-4 there seems to be a slight deviation between the Greenwich and our area measurements. Both samples of spots (*I* and *II*) reveal more or less that the Debrecen area data are generally the smaller.

In trying to find a reasonable explanation, we first compared a series of measurements carried out independently by two persons, furthermore by applying a more conventional method. Part B of the Figures show that the DAREAL measurements of the two persons are in good agreement. On the other hand the repeated measurements on twenty times enlarged projected drawings by using a planimeter have also given roughly similar deviations as the DAREAL (cf. part C of Figures 3-4).

Finally, area measurements performed in Debrecen on original Greenwich plates and compared to the published Greenwich measurements, shown in part D of Figures 3-4, yield the same results as the foregoing. It is to be seen most conspicuously in Figure 5, where all data of the different kinds of Debrecen measurements (used in Figures 3-4) are plotted, that the areas measured in Debrecen are indeed slightly smaller. Some quantitative data of the deviations in question are given in Table 1, on the basis of the DAREAL measurements used in the A, D and E parts of Figures 3 and 4, when both kinds of spot areas were measured.

It is not surprising at all that the Greenwich and Debrecen area data do not agree perfectly. This obviously arises from the different method of measurements. In Greenwich "a glass diaphragm ruled into squares, with sides of one-hundredth of an inch (0.254 mm), and placed as nearly as possible in contact with the photographic film[was used]. The integral number of suqares and parts of a square contained in the area of a spot ... was estimated by the observer." {cf. *GPHR 1909*, p.X} Such a square corresponds to 2 millionths of the Sun's disc, whereas the unit of the DAREAL measuring network

is smaller by at least one order of magnitude, and therefore the boundary of the area can be followed more closely (as with a planimeter) and even parts of the millionth of the Sun's disc are directly counted. The discordances could arise only from the periphery of the area, i.e. it may be larger for the larger spots, since they have longer perimeters.

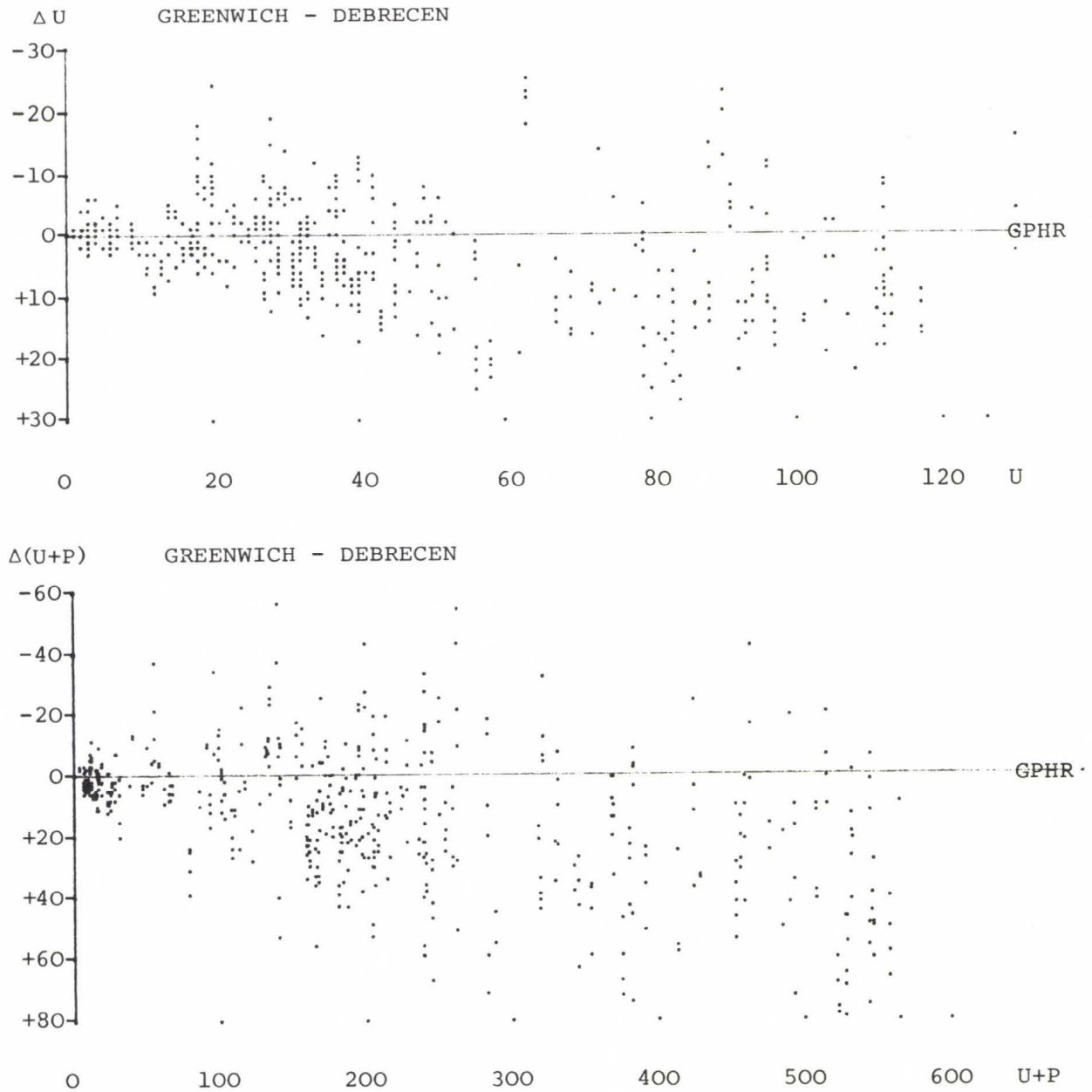


Fig.5 Differences between the results of Debrecen area measurements and published Greenwich area data *versus* the areas.
All data of Figures 3 and 4 are combined in the upper and lower part of the Figure, respectively.

Table 1

Deviations in area measurements between GREENWICH and DEBRECEN data

Size of AREA	UMBRA			UMBRA+PENUMBRA		
	0 - 20	21-50	50-120	1 - 100	101-250	251-600
MEAN DEVIATION	0	3	11	0	9	40
STANDARD DEVIATION	3	6	12	11	21	30
In the middle of the size interval	0%	9%	13%	0%	5%	10%
Number of spots available	68	86	65	49	104	66

The mean and standard deviation, as well as the areas are given in millionths of the solar hemisphere.

4. ON THE ACCURACY

It is well known that in smaller telescopes like our heliographs, the border of penumbra-photosphere is still well defined, while the umbra-penumbra border is generally much less distinct. Consequently, the error of measurement for the two kinds of spot areas are different. This is revealed by the examples of the two distributions given in Figure 6.

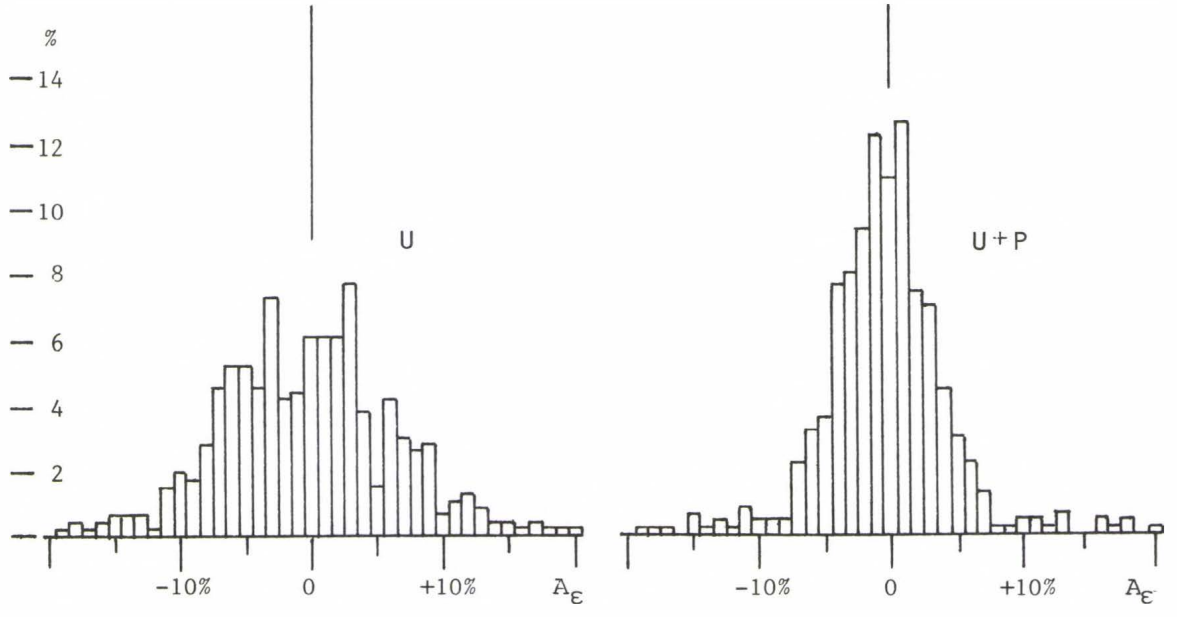


Fig.6 Frequency distribution of the scatter of deviations (A_ε) in U and U+P area measurements.

In Figure 6 all five individual measurements are used whose averages are plotted in part A of Figures 3.*I* and 4.*I*. Let A_i be one of the five single measurements and $\bar{A}$ their mean, then $100(\bar{A} - A_i)/\bar{A} = A_\varepsilon$ is the percentage deviation of A_i from $\bar{A}$.

In Figure 6 both the umbra and umbra+penumbra cases show a normal distribution. The standard deviations, 10% and 5%, for umbra and umbra+penumbra respectively, are in good approximation two to one (i.e. $\sigma_U = 2\,\sigma_{U+P}$).

These values can be regarded as the probable errors of the area measurements.

The errors principally come from the fitting of the measuring contour, which sometimes may be problematic close to the solar limb; however, some errors may also arise when the heliogram is not quite well exposed.Figure 7 shows an example of how the area of an umbra image can depend on the exposure. The error in determination of the etalon area may also have a slight influence on the area data, its maximum amount being 2%.

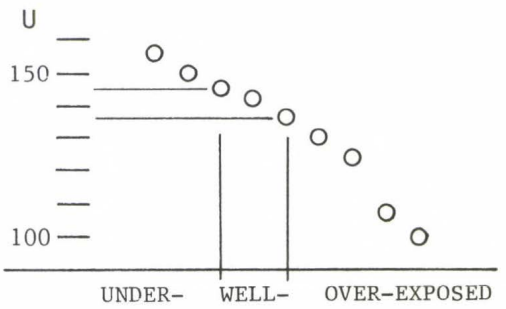


Fig.7 The effect of the exposure on the size of the umbra.

To get a more realistic idea of the accuracy of our area measurement of umbrae, the results of a two-day period of observation are shown in Figure 8 (on the next page).

The author thanks Ágnes Kovács for co-operation in these comparative measurements.

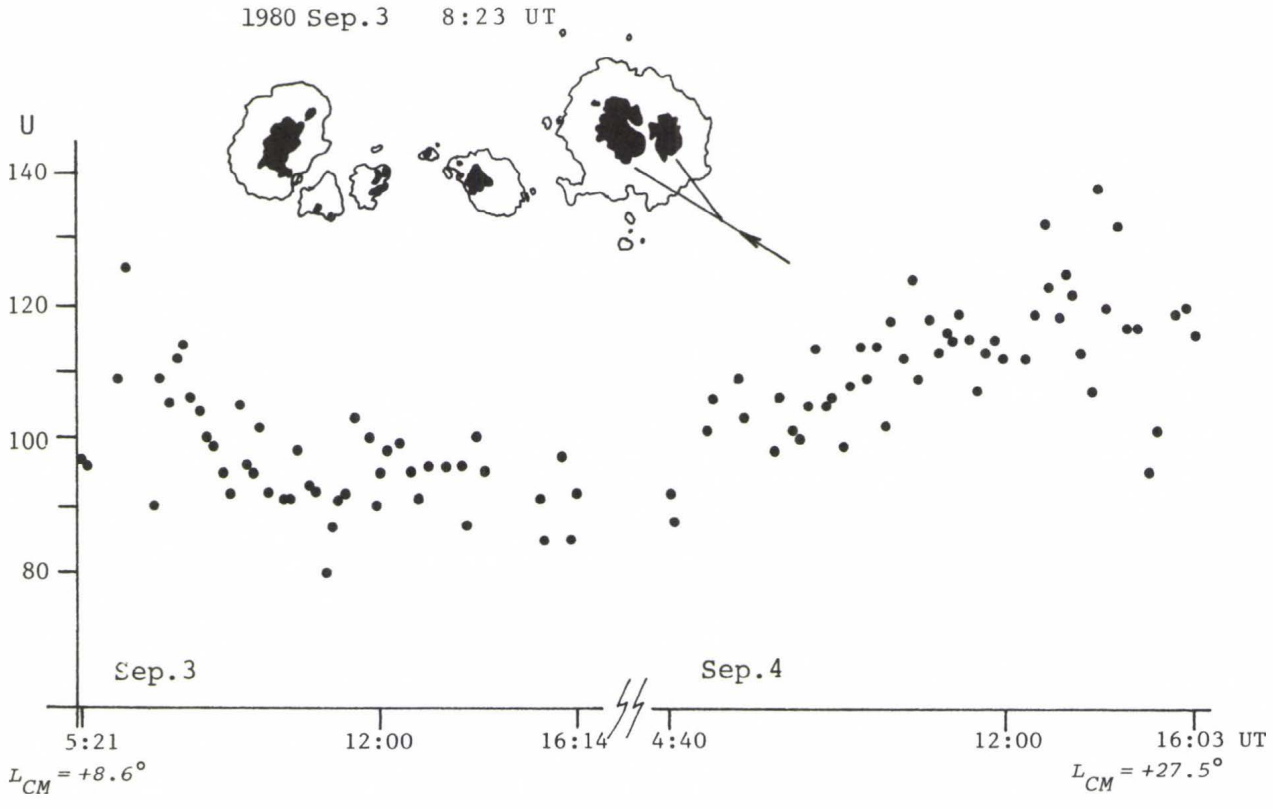


Fig.8 An example of a series of area measurements of a large double-umbra (U) over two days.

(The arrow in the drawing marks the measured double-umbra. Cf. additional pictures of the spot in L.Gesztelyi and L.Kondás, *Publ.Debrecen Obs. 5*, pp.133-143, 1983 and L.Gesztelyi, *Adv.Space Res. 4*, No.7, pp.19-22, 1984 = *Heliophys.Obs.Debrecen Preprint No.1.*)

PUBLICATIONS OF DEBRECEN HELIOPHYSICAL OBSERVATORY
Heliographic Series No.1
Appendix 3

L. Dezső

An account of the Greenwich Photoheliographic Results of 1874-1976 and of Debrecen's first Catalogue of 1977

1. INTRODUCTION

A certain periodicity in the occurrence of sunspots, found by H.Schwabe from his persistent systematic observations during the years of 1826-1843, became known worldwide through A.Humboldt's *Cosmos* (Volume 3) in 1851. Shortly after this, in 1852, E Sabine (London), R.Wolf (of Zürich) and A.Gautier (Genève) discovered independently a connection between Schwabe's period and the Earth's magnetic field, which was principally supported by John Lamont's (München) earlier announcement (1851) on a periodicity of about 10.3 years in the annual average daily ranges of magnetic declination. Herewith, from that time on the initial steps have been taken in investigations of relationships on solar-terrestrial physics.

However, in the middle of the 19th century, there was a lack of adequate solar data. As this became widely realized, new initiatives in recording sunspots were undertaken in several places. R.C.Carrington was the first who started and successfully carried out a long series of detailed observations and determined "the Elements of Position of the Pole and Period of Rotation" of the Sun numerical data of which are still used up to now. His results were published in *Observations of the Spots on the Sun from November 9, 1853, to March 24, 1861* {London, 1863}.

He remarks in the "Concluding Section" that "... in future observations of the Sun, ... the methods of photographic registration ... are obviously those to be followed, rather than the method of sketching and time observations which I have employed, while those improved processes were not yet worked out" (p.248).

The photographic registration were already recommended in 1854 by John Herschel and this "led to the preparation of the Kew photoheliograph"

(loc.cit.p.2). The prototype was designed by Warren de la Rue "with which he obtained in 1857 successful photographs of the Sun. This ... was transferred ... to the Kew Observatory ... in 1858, ... the Kew daily record ... continued unbroken until 1872." {H.W.Newton, *The Face of the Sun*, p.60, Penguin Books, 1958.}

In the "first instalment of the measurements" of positions and areas of sunspots observed with the Kew photoheliograph, the Authors, in dealing with the reduction of the positions, "followed the elegant and convenient method given by Mr. Carrington in his volume". {W. de la Rue, B.Stewart and B.Loewy, Researches on Solar Physics, *Phil.Trans. (Royal Soc.) 159*, pp.1-110, 1869.}

In 1873 the Kew photoheliograph, and the responsibility for regular observations of sunspots in respect to determination of their areas and heliographic positions were transferred to Greenwich.

2. ON THE OBSERVATIONS AND PUBLICATIONS

In 1873 E.W.Maunder was appointed at the Royal Observatory, Greenwich, and he developed the photoheliographic programme almost from the beginning. This work was in fact under his direction for nearly a half century.

The regular observations of the Greenwich Photoheliographic Department formally started on April 17, 1874.

Since, due to cloudy weather, it is hardly possible to obtain observations at a single place for each day in a year, it was necessary to fill the gaps in the records by similar photographs taken at other observatories. However, this failed for a long time, as seen in Table 1, especially for the first 4 years.

P h o t o h e l i o g r a p h s

The observations started at Greenwich with the Kew photoheliograph of 3.6-inch aperture. In September 1875 it was replaced by one of the five photoheliographs which were made (in 1873, originally for observing the Venus transits of 1874 and 1882) by the firm Dallmeyer. This was an improved model of the Kew heliograph. It had an objective of 4-inch aperture and 5-foot focal length. The primary image of the Sun's disc was enlarged by a magnifier to a 4-inch diameter on the plate. The heliograph was on a German equatorial mounting and had a driving-clock.

Two of the Dallmeyer heliographs (after its special use) were sent to Northwest India and Mauritius and a third one to the Royal Observatory,

Table 1

The yearly numbers of photographs of different observatories used -

- over more than two decades: Greenwich (G), Cape (C), Dehra Dun (DD), Kodaikanal (K), Mauritius (Ma) and

- occasionally: Melbourne (Me), Harvard (H), Mt.Wilson (MW), Debrecen (D), Naval (N), Yerkes (Y), Zurich (Z), Ebro (E), Freiburg (F), Roma (R), Tokyo (T).

(Both lists given in order of the number of plates supplied.)

Year	NO obs.	G	H / Ma	DD	Me / K
1874	118	139	2		
5	102	150	65		48
6	95	154	66		51
7	130	168			67
8	18	147	42	154	4
9	47	127	105	75	11
1880	25	157		168	16
1	17	168		171	9
2	22	201		142	
3	25	214		126	
4	51	154		161	
5	6	206	25	128	
6	2	199	36	128	
7	4	185	26	150	
8	7	171	38	170	
9	5	178	16	166	
1890	4	209	22	130	
1	2	201	16	146	
2	4	197	24	141	
3	3	212	40	110	
4	1	198	39	127	
5	1	219	23	122	
6	2	206	19	139	
7	1	183	25	156	
8	2	165	26	172	
9	1	203	8	153	
1900	6	145	29	186	
1	7	149	21	189	
2	17	177	10	162	
3	15	226	16	109	
4	3	211	11	139	2
5	1	183	4	163	17
6	1	181	123	8	52
7	-	183	98	6	78
1908	-	171	8	161	26

Year	NO obs.	G	C	DD / MW	K
1909	1	172		176	16
1910	-	171	104	89	1
1	1	225	117	18	4
2	1	235	102	24	4
3	-	252	95	5	13
4	-	236	116	11	2
5	-	201	136	17	11
6	1	180	166	18	1
7	-	112	243	7	3
8	1	136	217	10	1
9	-	146	208	6	5
1920	-	195	153	3	15
1	-	215	139	5	6
2	-	201	151	2	11
3	-	199	153	1	12
4	-	212	147	4	3
5	E(2)	216	137	2	8
6	-	192	161		12
7	-	206	151	1	7
8	N	236	123		6
9	Y(2)	229	123		11
1930	Y(3)	221	133		8
1	-	233	115		17
2	-	244	115		7
3	-	254	99		12
4	-	243	117		5
5	-	257	98		10
6	-	240	111		15
7	-	241	114	1	9
8	-	260	91		14
9	-	255	102		8
1940	N	240	119		6
1	-	221	125	7	12
2	N	241	118		5
1943	N(2)	238	119		6

Year	NO obs.	G	C	MW	K
1944	N	217	145		3
5	-	232	112	6	15
6	-	233	126		6
7	-	164	196	1	4
8	-	184	175	2	5
9	-	226	139		
1950	-	228	131	3	3
1	-	261	98		6
2	-	303	61		2
3	-	273	90		2
4	-	268	91		6
5	F	269	91	1	3
6	-	280	85		1
7	-	287	74		4
8	-	275	85	2	3
9	-	256	105	1	3
1960	-	263	94		9
1	-	251	108	1	5
2	-	227	134		4
3	-	243	113	1	8
4	-	217	144		5
5	-	226	132	1	6
6	D,Z	229	130		4
7	D	250	110	2	2
8	D(2)	221	133	2	8
9	-	230	129		6
1970	D	246	106	2	10
1	-	190	164	3	8
2	R,Z	179	163	2	20
3	D(2)	219	126	4	14
4	T,Z	237	108	1	17
5	D	233	112	9	10
1976	D(2)	258	77	7	22

After 1918 there is no gap in the yearly observations, therefore in the column of"NO obs." it is indicated if an observatory supplied one (or more) additional photograph(s).

Cape of Good Hope for filling gaps in the Greenwich series. The daily photographs of the Sun were commenced at Dehra Dun by order of the Government of India, under the superintendence of Trigonometrical Survey of India. Similar observations started at the Royal Alfred Observatory, Mauritius, too. The Solar Physics Observatory at Kodaikanal, soon after its foundation

at the beginning of the century, also commenced to participate in this work even up to date (cf. p.27). Until 1914 at Kodaikanal a Dallmeyer 4-inch heliograph was used which was replaced by another one having a Cook photovisual objective of 6-inch aperture. The Cape Observatory actually began its regular solar observations only in 1910 but since then remained the principal supplier of Greenwich up to 1976, notwithstanding that in 1972 it became a part of the South African Astronomical Observatory.

The enlarging system in all Dallmeyer photoheliographs has been changed to increase image size of the Sun's disc to nearly 8 inches, first at Dehre Dun in 1883, then at Greenwich in 1884, and finally at Mauritius in 1885. The objective-glass of the Greenwich heliograph was replaced in 1910 by a Grubb photographic objective, while a new enlarging system was supplied by Ross in 1926. Between 1894 and 1936 a 9-inch photoheliograph was also often used for routine observations in general mostly on occasions of good seeing, but it has also been away on various expeditions for longer periods. Its objective was made by Grubb, and it had a Ross enlarging system.

According to the relevant publications, the objective apertures were often stopped down to some extent. E.g. in Greenwich the used free aperture of the Dallmeyer 4-inch photoheliograph was 2.9 inches between 1915 and 1939 and the 9-inch heliograph was stopped down to 3 or 4 inches during the years 1924-1927.

For the first 4 years, 1874-1877, in addition to the Greenwich solar photographs, there were photographs available only from the Observatories of Harvard College and of Melbourne.

P u b l i c a t i o n s

The yearly results of the immediate measures of positions and areas of sunspots, as well as the deduced heliographic coordinates have been published as given in Table 2. Despite the fact that these yearly data sets, covering more than a 100-year, appeared from time to time with different title-pages, they are generally referred to as the *Greenwich Photoheliographic Results* {we abbreviate this as *GPHR*; this, with a date(s) of year, indicates the volume containing the data of that year(s) e.g. as in the first column of Table 2}.

The *GPHR 1886* was the first volume in which the final mode and form of data presentation was applied. For the period 1874-1881, the early Greenwich measurements could only be afterwards supplemented, but even then only partially, by solar photographs from other observatories.

Table 2

Finding list of the daily position and area measurements of sunspots

GPHR	Publ. in	Ref.	GPHR	Publ. in	Ref.	GPHR	Publ. in	Ref.	GPHR	Publ. in	Ref.
1874-85	1907	I	1902	1904	d	1924	1926	e	1946	1955	e
1878-81	1892	II	1903	1905		1925	1927		1947	1955	
1882	1884	a	1904	1906		1926	1928		1948	1956	
1883	1885		1905	1907	d	1927	1929		1949	1956	
1884	1886		1906	1909	e	1928	1930		1950	1957	
1885	1887		1907	1910		1929	1931		1951	1957	
1886	1888		1908	1910		1930	1932		1952	1957	
1887	1888	a	1909	1910		1931	1933		1953	1957	
1888	1889	b	1910	1911		1932	1933		1954	1958	
1889	1890		1911	1912		1933	1934		1955	1958	e
1890	1892		1912	1913		1934	1935		1956	1959	B 14
1891	1893		1913	1914		1935	1936		1957	1961	26
1892	1894		1914	1918		1936	1938		1958	1962	60
1893	1896		1915	1920		1937	1951		1959	1965	103
1894	1897		1916	1921		1938	1949		1960	1967	132
1895	1897		1917	1922		1939	1952		1961	1968	B 144
1896	1898		1918	1922		1940	1952		1962-64	1971	A 6
1897	1898		1919	1923		1941	1953		1965	1973	8
1898	1899		1920	1923		1942	1953		1966	1974	10
1899	1900		1921	1924		1943	1953		1967	1975	11
1900	1902	b	1922	1924		1944	1954		1968-71	1978	12
1901	1902	c	1923	1925	e	1945	1952	e	1972-76	1980	A 13

R e f e r e n c e s:

I) *Photo-Heliographic Results 1874 to 1885* being Supplementary Results from Photographs of the Sun taken at Greenwich, at Harvard College, U.S.A., at Melbourne, in India, and in Mauritius in the years 1874 to 1885; and measured and reduced at the Royal Observatory, Greenwich

(Appendix to the Greenwich Observations,1907) Edinburgh, 1907 (23+321 pages).

II) *Measures of Positions and Areas of Sun Spots and Faculae* on Photographs taken at Greenwich, Dehra Dun and Melbourne; with the deduced Heliographic Longitudes and Latitudes, 1878-1881.

Solar Physics Committee, Department of Science and Art, London, 1892 (78 pages).

a) *Spectroscopic and Photographic Observations*
(Extracted from the Greenwich Observations, ...)

b) *Results of the Spectroscopic and Photographic Observations*
(Extracted from the Greenwich Observations, ...)

c) *Results of the Photo-Heliographic Observations*
(Extracted from the Greenwich Observations, ...)

d) *Results of Measures ... of Photographs of the Sun*
(Extracted from the Greenwich Observations, ...)
< Greenwich Photo- Heliographic Results >

e) *Results of Measures ... of Photographs of the Sun*
< Greenwich Photo- Heliographic Results >

B) *Photoheliographic Results*
Royal Greenwich Observatory Bulletins, Number ...

A) *Photoheliographic Results*
Royal Observatory Annals, Number ...

Numbers given in column Ref.

(All publications listed above have been printed at H.M.Stationary Office.)

The "Measures of Positions and Areas of Spots ... upon Photographs of the Sun" for the years 1874 to 1877 exhibited in calendar form were originally published as early as the annual volume of the *Greenwich Observations* for the year 1877 (pp.108-148) . Later on a number of solar photographs taken at the Observatories of Harvard College and Melbourne, for days unrepresented in the Greenwich series were also measured and reduced at Greenwich. The combined results from Greenwich, Harvard and Melbourne photographs for the 4 years, 1874-1877, were published in calendar form in the first section of *GPHR 1874-85* (pp.1-45).

The daily Greenwich results of measurements in calendar form for the 4 years, 1878-1881 were first published in the volumes of *Greenwich Observations* for the years 1878 to 1881. These could be partially completed with measurements made at the Solar Physics Observatory, South Kensington, on plates taken at Dehra Dun and Melbourne, and republished as *GPHR 1878-81*. This is the only *GPHR* volume which also includes non-Greenwich measurements. Nevertheless, one of the former measurers of Greenwich was employed as examiner among the measurers at South Kensington.

The publications included in the *Greenwich Observations* concerning the early Greenwich measurements on sunspots for the years 1874-1881 are superseded by *GPHR 1874-85* and *GPHR 1878-81*.

The daily results of observations for the years 1882-1885 were published only in calendar form and only in the 4 volumes of *GPHR 1882* - *GPHR 1885*. (In *GPHR 1878-81*, *GPHR 1882*, *GPHR 1883* and *GPHR 1884* /Greenwich/ Mean Solar Time is still used!)

Beginning with the *GPHR 1886*, besides the calendar form, the measures of solar photographs were also given in the form of Ledgers. In these L e d g e r s, the daily results for each s u n s p o t g r o u p are collected together from the measures of the individual spots, i.e. from the daily register, and given in a condensed form. The main part of *GPHR 1874-85* consists of the Ledgers, compiled afterwards for the years 1874-1885. (Here the previously neglected photographs taken at Mauritius are additionally included.)

As a rule, the daily data published in all volumes of *GPHR* relate to measurements on a single photographs, except for the very few cases, when in the early years two plates were measured and the means of measures were generally given.

For the 103-year period of 1874-1976 all data of the *Greenwich Photoheliographic Results* can be found in the volumes listed in Table 2. Over and

above the daily results given in calendar form and in Ledgers (until 1955 inclusive) the following are published: the daily (projected and corrected) total areas of umbrae and whole spots, as well as their means for each synodic solar rotation and for the year; and four kinds of mean heliographic latitude of sunspot groups for each rotation and for the year. Exactly the same kind of area and latitude data are given in the *Debrecen Catalogue*, too.

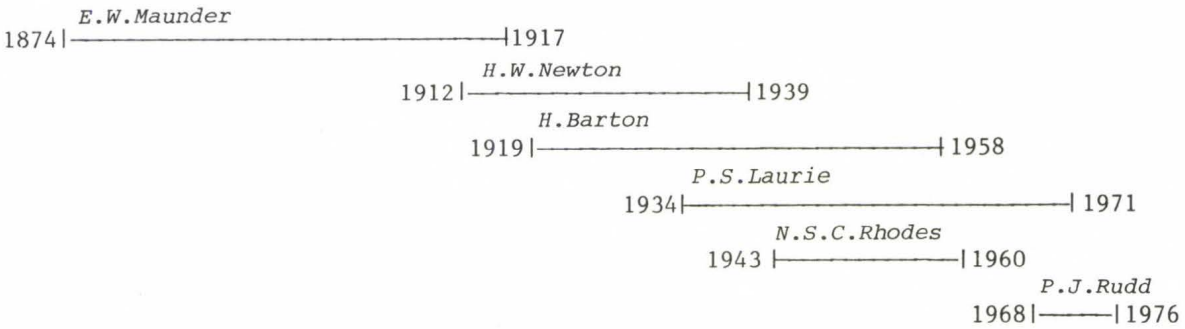
3. MEASUREMENT AND REDUCTION

The measures of the photographs were made with a large position-micrometer. The distance of a spot from the centre of the Sun's disc and its position angle were directly read, while the areas were measured with a glass diaphragm ruled with cross-lines into squares (cf.p. 226). Both the device and the method of measuring had practically no change over the whole Greenwich period of measurements.

As a rule, the plates were measured twice independently by two measurers and the means taken. (The initials of the two persons measuring the photograph are given in the publications until *GPHR 1915*). From *GPHR 1916* to *GPHR 1955* there are some volumes where mention is made that several plates were measured only once, each by an experienced measurer. All in all, nearly 80 persons were engaged in this work but only ten percent of them participated in measuring plates of a single year. While ten persons took part in measurements of a series of plates which covered at least a 10-year period of observation. Table 3 makes plausible that the steady homogeneity of the measurements could be assured.

Table 3

The principal measurers and their period of activity



The probable error in measurements of positions and areas of sunspots, as well we the personality in measurements of areas were already studied in the eighties of the last century and discussed in detail in two papers {*GPHR 1885*, pp.XV-XXXII and *GPHR 1888*, pp.XV-XLII}. It was found, among others, that both the position and area measurements are as accurate for the 4-inch as for the 8-inch solar images. The probable error in area measurements are in rough approximation about the same in Greenwich as in *Debrecen* (pp.219-230).

The zero of position angles for the photoheliographs has been determined by different methods, by means of two overlapping solar photographs, or visually, observing the apparent path of the Sun. A correction for the inclination of the Sun's path to the spider-wire was applied. (In case of 4-inch solar images, a correction was applied for optical distortion of the Dallmeyer photoheliographs, while no correction has been used to the 8-inch images.) When required, a correction was made for the effect of atmospheric refraction according to the formula:

$$\textit{VERTICAL DIAMETER} = \textit{(HORIZONTAL DIAMETER)} \times (1 - \sin 57.5'' \, tg^2 z)$$

where z is the apparent zenith-distance.

The heliographic coordinates were calculated as given in the paper mentioned at the end of Section 1. Over more than three decades the necessary parameters have been derived from W.de la Rue's *Auxiliary Tables for determining the Angle of Position of the Sun's Axis and the Latitude and Longitude of the Earth referred to the Sun's Equator*, while later on from the *Nautical Almanach and Astronomical Ephemeris for the year 1907* and its following issues.

4. WHAT WAS DIRECTLY MEASURED

In all solar photographs taken prior to 1916 the individual spots in a sunspot group (specified with a No) have in most cases been measured separately and also given in the publications one by one. However, in many cases two or more little spots close together were combined into a cluster and the position of the centre of gravity and the aggregate area of the cluster are given. (A spot when identified from one day to the next got a letter or a number beside the group No.) The mean position of a group was calculated from the positions of the separately measured components of the group taking their weighted means by using the areas as weights. In this respect a difference was made in the practice from 1916 on. From that time on, the position of the centre of a sunspot group was estimated and only in the case of large or complex groups of spots were the positions of the chief components measured individually, and also for groups near the east

or west limbs of the Sun's disc, where the effects of foreshortening are appreciable. It was found that the latter method saved much numerical work without any diminution of accuracy {*GPHR 1916*, p.VIII}.

In *Debrecen* we returned in principle to the old Greenwich method (of E.W.Maunder) but of course the spots have been combined with respect to their magnetic polarity.

5. VARIOUS MAIN TABLES OF DATA

From 1874 to 1915 *Ledgers* of groups of sunspots are given together for all groups. They contain for each day both the projected and corrected areas, the heliographic coordinates and the distance from central meridian; furthermore, for the period of observation the (simple) means of the corrected areas and coordinates are given.

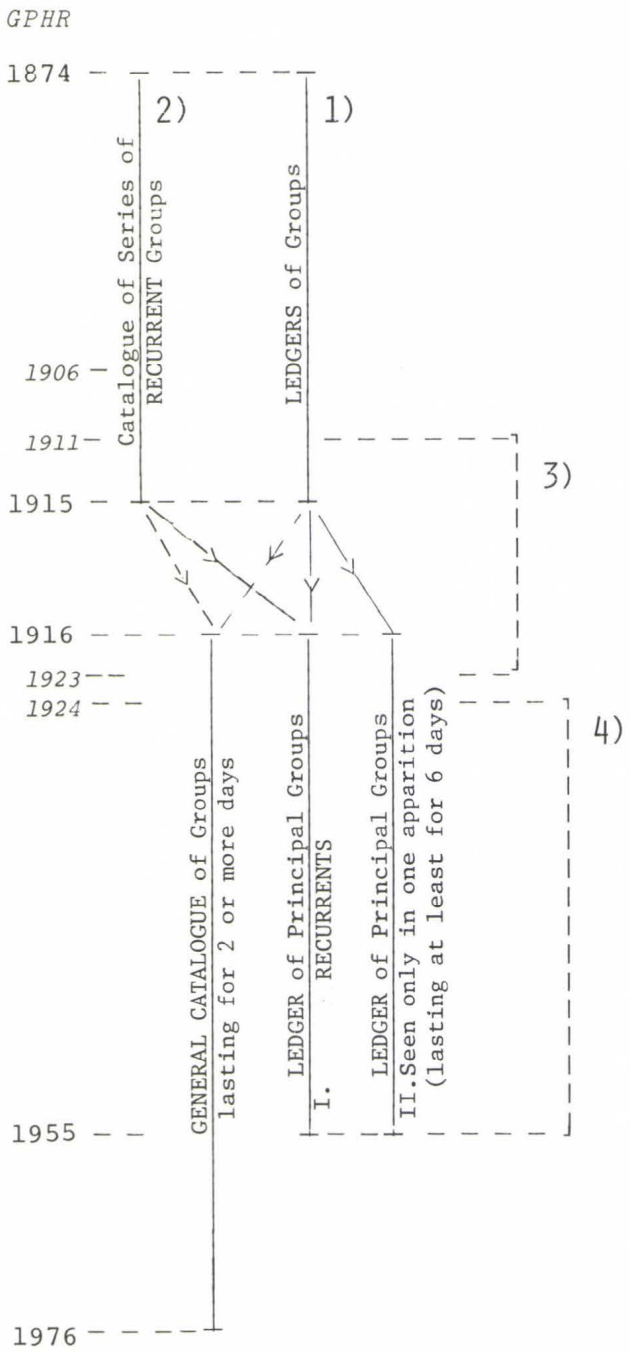
From 1916 Ledgers are only compiled for the principal groups, i.e. lasting for six or more days, however individual components are also given after their respective groups, where they are large and distinctive. Such Ledgers are published last in *GPHR 1955*. Later, the data of the principal and most stable components of groups are separately given only in the daily results. The Ledger I supersedes the *Catalogue of Recurrent Groups* (cf.Table 4). The recurrent groups of spots are those which were observed in two or more consecutive apparitions. Important components of these groups have been given in all cases where it appeared probable that an individual component lasted to the second or third rotation after its first appearance.

In the *Debrecen Catalogue* a group is given as recurrent only if at least one of its component passing over the west solar limb could be identified to all probability on the east limb after a full fortnight.

By way of the Ledgers it is easy to survey the life history of all groups till the end of 1915. For the second period of the Greenwich observations it is the *General Catalogue of Groups of Sunspots* where the most important data of each group are summarized. Here, beside the mean corrected areas and mean heliographic coordinates, as given in the Ledgers, the date and longitude from central meridian for the first and last appearances of the group, as well as its duration in days are tabulated, and from 1927 the time of central meridian passages are also included. Reference is also given to the recurrent series number of the spot groups and its order in the series. (For the period 1945-1955 the corresponding Mt.Wilson group numbers can be found, too.)

Table 4

Schematic finding list of the main data of Groups of Sunspots



E x p l a n a t i o n s:

1) The first sunspot group included in the Ledgers (i.e. in *GPHR 1874-85*) is the No.82 (photographed on April 17,1874) and the last one in *GPHR 1915* is No.7590. Till 1915 inclusive the Ledgers contain all groups, i.e. even the groups seen on one day only, usually composed of one or two very little spots. Beginning with 1916 in the General Catalogue the group numbers are in continuation of those given in 1915, i.e. it starts with No.7591; the one-day groups appear only in the daily results and with a distinctive numeration. (However from 1933 they also can be found in a separate list at the end of the General Catalogue; in the *Debrecen Catalogue* the one-day groups are not given at all.)

2) For the years 1874 to 1906 it was compiled by Annie S.D.Maunder and published in *Appendix to Greenwich Observations,1907*. The Series No.1 of the Recurrent Groups was first seen on June 1,1874, the last one in 1906 was the No.624. The continuation (Nos.625-754) were published in the relevant annual volumes, the last in *GPHR 1915*. In Ledger I the last Series of recurrent groups was the No.1678 in *GPHR 1955*. The recurrent groups from 1916 to the end of 1976 (Nos.754-2213) are indicated in the References of the General Catalogue.

3) In the Ledgers of 1911-1923 and in the General Catalogue of 1916-1923 the longitude of the group is given as computed upon two different systems. In *System I* the daily sideral motion due to the Sun's rotation being assumed to be constant for all spots, whatever their latitude, corresponding to Carrington's assumed mean rotation period. In *System II* the daily sideral motion was assumed to vary with the latitude (B) in accordance with the formula: $14.11° - 2.13° \sin^2 B$. In *System II* the longitude of the centre of the Sun's disc was adopted as the longitude given in *System I* for the commencement of the year in question.

4) In the Ledgers of 1924-1955 the proper motion in longitude is given as derived from the difference of longitude thus computed from the measured positions on any given day and the first day on which the group of spots or single spot was visible, after the correction for the motion appropriate to the latitude has been applied according to the formula: $14.37° - 2.60° \sin^2 B$.

This General Catalogue of Groups is quite similarly continued in *Debrecen* , the only difference being that the mean position data are weighted arithmetic averages using the areas as weights. When a sunspot group during the disc passage of its solar region is not seen upon the Sun's disc on one or more days but later on the region is again not spot-free, then this new spot emergence is generally not regarded as a different spot group. Both in Greenwich and *Debrecen* such a kind of group is referred to as intermittent.

Groups which are approximately in the same heliographic position in consecutive disc passages (partially or complete) but with definite breaks in their history between each rotation are not classed as recurrent. Such groups may be termed as revivel; they differ from "intermittent" groups in their being of long period intermittency. The revival groups have been tabulated in series and separately given only from *GPHR 1917* to *GPHR 1955*. (For the years 1916-1925 they are also marked in the General Catalogue of Groups.)

In *Debrecen* no special effort was made to pick out the revival series of groups as it is hardly possible to complete this task unambiguously on the basis of spot observations alone. Namely, on the far side of the Sun, the intrinsic proper motions of spots remain unknown and, consequently, there is always an element of uncertainty. For this reason, in the *Debrecen* list of recurrent series of groups, only the unquestionable cases are included.

For the years 1956-1976 a brief annual summary of sunspot activity was added in the Greenwich publications, which will also be continued in the future.

6. SUPPLEMENTARY NOTES

On the preceding pages a brief review was given on the entire long series of *Greenwich Photoheliographic Results*, meanwhile mention was made about some differences between the Greenwich catalogue and our new undertaking. To be more correct,often the original wording of the published volumes has been used. After all it could be seen that in the *Debrecen Photoheliographic Results* almost every kind of data on sunspots can be found that were formerly published in the corresponding Greenwich volumes.

It should be emphasizes that instead of a brief description of the group according to the Greenwich fashion, in our daily results additional data and various signs are given to be able to form a detailed picture about the spot group.

The Debrecen method of measurements is quite different from that of the Greenwich but still the results should agree as shown by some experiences of Ágnes Kovács and O.Gerlei (cf. papers in this issue, pp.211-230).

The essential difference between the Greenwich and Debrecen proceeding is in the way of looking at the sunspot groups, as we also take into account the magnetic polarity of the spots. Hence, the position of the group is derived by us from the means of the separately calculated mean positions of the *p*- and *f*- polarity spots. That does not inevitably agree exactly with the means of the positions of all spots of the group.

Beside the standard Greenwich data, by means of the magnetic spot polarities there is a possibility to present data on features of sunspot activity in more detail. However, in those parts of the *Summaries of results* which also include separately the *p*- and *f*- parts of groups, all data are only given within approximately 60° longitude from central meridian; furthermore, here the groups of the old and the new solar cycles are also separately tabulated. The limitation of 60° or so is an expedient restriction as near the solar limb the spot observations are falsified by an up to now unknown effect.

In conclusion, taking it all in all, the *Debrecen Catalogue* of sunspots seems to be a fairly homogeneous continuation of the *Greenwich Photoheliographic Results*.

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KÖZLEMÉNYEI

NAPFOLTKATALÓGUS AZ 1977. ÉVRŐL

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